CITY OF
HAYWARD
HEART OF THE BAY

CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING

Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

July 2, 2008
4:30 p.m. – 6:00 p.m.

AGENDA

I. Call to Order

II. Roll Call

III. Public Comments: *(Note: For matters not otherwise listed on the agenda. The Committee welcomes public comments under this section, but is prohibited by State Law from discussing items not listed on the agenda. Items brought up under this section will be taken under consideration and referred to staff for follow-up as appropriate. Speakers will be limited to 5 minutes each; organizations represented by more than one speaker are limited to 5 minutes per organization. All public comments are limited to this time period on the Agenda.)*

IV. Approval of Minutes of June 4, 2008

V. Green Building Ordinance Update and Cost Benefit Information
Susan Daluddung, Director of Community & Economic Development

VI. Next Meeting: Wednesday, September 3, 2008 –

a. Climate Action Plan Update
Erik Pearson, Senior Planner, and Consultants John Deakin, HDR, and Steve Coyle, Town Green

b. Bay Friendly Landscape Guidelines for Private Development
Teresa Eade, Senior Program Manager, StopWaste.org

VII. Adjournment

Assistance will be provided to those requiring accommodations for disabilities in compliance with the Americans with Disabilities Act of 1990. Please request the accommodation at least 48 hours in advance of the meeting by contacting Katy Ramirez at 510/583-4234 or by calling the TDD line for those with speech and hearing disabilities at 510/247-3340.

CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING
Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

June 4, 2008
4:30 p.m. – 6:00 p.m.

MEETING MINUTES

I. Call to Order-4:35 pm

II. Roll Call

Members:

- Michael Sweeney, Mayor
- Olden Henson, Councilmember
- Bill Quirk, Councilmember
- Rodney Loché, Planning Commissioner
- Julie McKillop, Planning Commissioner
- Al Mendall, Planning Commissioner

Staff:

- Fran David, Assistant City Manager
- Susan Daluddung, Community and Economic Development Director
- Margret Elliott, Building Official
- Glen Martinez, Supervising Building Inspector
- Bob Bauman, Director of Public Works
- Vera Dahle-Lacaze, Solid Waste Manager
- David Rizk, Planning Manager
- Michelle Koo, Landscape Architect
- Erik Pearson,Senior Planner
- Arlynne J. Camire, Assoicate Planner
- Tiffany Roberts, Planning Intern (Recorder)

Others:

- Robert Alminana, San Francisco
- Ann Cheng, Transportation and Land Use Coalition
- Doug Grandt, Volunteer and Resident
- Laura Hall, San Francisco
- Kevin Colin, Emeryville
- Ron Reese, Hayward Resident
- Brian Stanke, Hayward Resident

III. Public Comments-

Doug Grandt – presented information on 350.org campaign

IV. Approval of Minutes of May 7, 2008 - Approved.

V. Green Building Ordinance – Discussion

Discussion of the Green Building Ordinance continued from last month's meeting. Community and Economic Development Director Daluddung provided a summary of meetings which she and Building Official Elliot have held. One meeting was held with StopWaste.org staff and a variety of city department staff to discuss recommendations which StopWaste.org has for proceeding with the creation of a Green Building Ordinance. Another meeting was conducted with the Bay East Association of Realtors to present Hayward's Green Building Ordinance efforts, to discuss Hayward's approach and to get feedback from the various county realtors. A final meeting was held with several members of the building community. Many have emphasized the need for regional consistency because of the difficulty presented when a builder or contractor has differing guidelines from city to city.

David Rizk provided a synopsis of a meeting titled The Green Advantage: Builder and developer Forum in Newark. The meeting was attended by David Rizk, Arlynne Camire, Glen Martinez, Tiffany Roberts, and Vera Dahle-Lacaze. The focus of the meeting was on residential building. Presentations were made by Build It Green and Davis Energy Group as well as others within the building community. Again, a need for regional consistency in green building was emphasized. David also provided the group with a summary of AB2939, which is a bill currently being supported by StopWaste.org. Existing provisions of the California Building Standards Law generally preempt cities and counties from setting building standards different from those set forth in the State Building Code ("State Code"), except where the local agency determines that modifications are "reasonably necessary because of local climatic, geological, or topographical conditions. AB 2939 would remove this requirement by expanding the current local code modification authority to expressly authorize adoption of local green building standards.

Mayor Sweeny voiced support for AB2939.

Building Official Elliott discussed the possibility of making the green building program voluntary.

Planning Commissioner Mendall suggested that if program were to be voluntary, that we should start it tomorrow.

David Rizk reminded group that we are still unsure of necessary review time.

CED Director Daluddung mentioned that we want to ensure the participation of the building community. She further noted that green communities are being built in Berkeley and Oakland and it is not required in those jurisdictions.

Councilmember Quirk complained that staff had still not completed a list of costs associated with green building to his liking. For example, he would like to know the cost of no or low-VOC paint and its benefit.

Staff will try to accommodate those requests.

Laura Hall presented information on Transit Oriented Development and Ann Cheng and Robert Alminana were on hand to answer questions.

After the presentation, Councilmember Henson asked for a description of a TOD process from beginning to end.

Hall responded that integral to the process is the idea of listening to community feedback and working with those suggestions.

Councilmember Quirk said that some developers in the area do not trust the concept and have concerns if it can work.

Other questions were raised about the viability in areas that may not be pedestrian friendly, and that have long deep lots. Other questions were raised about how to start where there is already existing buildings or development.

Response was that planners must re-learn how to make communities. In places where development already exists there may be potential for re-facing buildings, re-landscaping, etc.

In general, the presentation was well received.

VI. Next Meeting: July 2, 2008 – Green Building Ordinance

VII. Adjournment – 6:03pm

CITY OF
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DATE: July 2, 2008

TO: Mayor and City Council Sustainability Committee

FROM: Director of Community and Economic Development Department

SUBJECT: Proposed Green Building Ordinances for Private and Municipal Developments

RECOMMENDATION

That the Sustainability Committee reviews and comments on this report and the attached green building ordinance for private development and the attached green building ordinance for municipal projects, with any revisions to be incorporated into revised ordinances and forwarded to City Council.

SUMMARY

For private developments, City staff is recommending that all new residential projects be required to be GreenPoint Rated, and residential remodel and addition projects entailing more than 500 square feet be encouraged to become GreenPoint Rated. Such rating will ensure that minimum green building measures are incorporated into new residential projects, and confirmed by a certified, independent third party rater. For non-residential private projects consisting of more than 1,000 square feet, staff is recommending that projects incorporate green building measures and meet a minimum 20 point score utilizing the LEED checklists, and that such measures identified on the checklists be verified as being incorporated into projects by City of Hayward plan checkers and inspectors.

For municipal projects entailing $5 million in construction costs or 20,000 square feet or more, and that are owned or occupied by the City or Redevelopment Agency, or part of a Public/Private Partnership, staff is recommending such projects be required to be LEED Silver certified. LEED Silver certification means that not only will projects be required to be built to LEED Silver standards, but also be certified by a LEED certified rater. Projects that do not meet the size or value thresholds requiring LEED Silver certification are recommended to comply with the private non-residential standards (for non-residential components), or be GreenPoint Rated (for residential components).

A matrix is included as Exhibit A that summarizes staff's recommendations, as well as anticipated City Council meeting dates and anticipated dates recommended required standards would become effective.

BACKGROUND

During the last several months, staff has been providing the Committee a variety of information related to development of a green building ordinance for Hayward. Key points associated with such discussions have been whether to make green building measures voluntary or mandatory and what system to utilize to ensure such measures are incorporated. Information related to such issues is included in the Discussion section of this report.

What is Green Building?

Green building is a holistic approach that incorporates green building measures and techniques into construction. Green buildings are sited, designed, constructed, and operated to enhance the well-being of their occupants and support a healthy community and natural environment. In practical terms, green building is a "whole-systems" approach to building that includes:

- Designing for livable communities
- Using sun and site to the building's advantage for natural heating, cooling, and daylighting
- Landscaping with native, drought-resistant plants and water-efficient practices
- Building quality, durable structures
- Reducing and recycling construction and demolition waste
- Insulating well and ventilating appropriately
- Incorporating durable, salvaged, recycled, and sustainably harvested materials
- Using healthy products and building practices
- Using energy-efficient and water-saving appliances, fixtures and technologies

When implemented holistically, these strategies serve to preserve our environment for future generations by conserving natural resources and protecting air and water quality. They provide benefits for us today by increasing comfort and well-being and helping to maintain healthy air quality. Finally, green building strategies are good for everyone's pocketbook by reducing maintenance and replacement requirements, reducing utility bills and lowering the cost of home ownership, and increasing property and resale values.

What is the GreenPoint Rating System?

The GreenPoint Rating System is a system that may be used to ensure green building measures are incorporated into residential construction projects. Currently, there are three GreenPoint Rating systems, each with separate guidelines and checklists: New Home Construction (for single-family homes), Multi-Family (for multi-family units) and Existing Homes (for remodels and additions). GreenPoint Rated features independent verification of the home's green building features and benefits, coupled with outstanding consumer education tied to the program brand and logo. At the heart of the program are Certified GreenPoint Raters--the people who evaluate each home to ensure it meets the program's standards for high performance.

A GreenPoint Rated home is graded on five categories: energy efficiency, resource conservation, indoor air quality, water conservation, and community. If the home meets minimum point requirements in each category and scores at least 50 points as verified by a Certified GreenPoint Rater, it earns the right to bear the GreenPoint Rated label. It also provides a numerical score, which allows buyers to evaluate and compare the environmental performance of different homes.

The GreenPoint Rating System is a system developed by Build It Green. Build It Green is a non-profit membership organization whose mission is to promote healthy, energy- and resource-efficient building practices in California. The organization works with mainstream stakeholders in the housing industry to accelerate the adoption of green building practices, and its short-term goal is to facilitate the greening of 10,000 housing units by the end of 2008. Earlier this year, the Homebuilders Association of Northern California endorsed Build It Green's GreenPoint Rating System. Build It Green also offers training courses and certification programs where interested parties can become certified GreenPoint raters. Build It Green's website currently shows that there are 143 certified raters in the Bay Area, and with continued training, the number of certified raters will increase.

Fees to Build It Green cover the cost to review, process and quality assure the application and final checklist. It also covers processing of the certificate for the homeowner. The application fee per project is $400, the processing and certificate fee is $100 per home or $100 per project, the certificate fee is $10 for each additional certificate and the pre-construction review is $350 per project. The Fees for conducting a home rating are negotiated directly between the GreenPoint Rater and client. While every project is unique, surveys show that basic rating fees (excluding consultation and travel) typically range from $700-$1500 for a single-family home or $3,750-$6,000 for a 30-unit subdivision or multifamily project and can be as high as $5,000 for residential additions. Also, additional initial costs for green building materials and products are incurred (see later discussion on this topic).

The current checklists for New Construction, Multi-Family Development and Existing Homes are included as exhibits. Checklists and guidelines are revised periodically, such as the Multi-Family Guidelines that were released in May of this year. The attached ordinances do not specify specific checklist and guidelines versions, since the most current checklist and guidelines from Build It Green will be the ones in effect at time of permit application submittals. A summary of each checklist and checklist point thresholds that projects must meet to be GreenPoint Rated follows.

<u>New Home (Single Family) Construction (Exhibit B: checklist and information)</u>

In order for a new home to be GreenPoint Rated, it must:

- earn a total of at least 50 points on the checklist;
- earn a minimum total of points for each category as noted: Energy (30 of possible 108), Indoor Air Quality/Health (5 of possible 45), Resources (6 of 66), and Water (9 of 47);
- meet three pre-requisites: incorporate 50% construction waste diversion [Hayward's current practice is to ensure such diversion occurs, and for 2006, 65% diversion occurred, with a goal of reaching 75% diversion by 2010], exceed Title 24 energy standards by 15%, and incorporate Green Points checklist in blueprints;

- have an independent third party certified rater verify that identified measures have been incorporated into the project.

The attached checklist shows how each checklist item, sorted by project component, applies to five categories. A proponent, once meeting the three pre-requisites, may choose from a variety of checklist items, provided the minimum total of points for four categories as noted in the second bullet above, is achieved. The last page of Exhibit B is a summary of costs of green building, indicating that initial costs will likely be higher when compared to traditional building costs, but the long-term costs will be less due to energy efficiency and higher quality construction.

Multi-Family Construction (Exhibit C: checklist and information)

Although the new version of the Multi-Family Green Building Guidelines was adopted in May of this year, the accompanying checklist has not been released, but will be released in the near future. A summary of the changes to the 2004 Multi-Family Green Building Guidelines is the first page of Exhibit C. That summary indicates that "measures have been thoroughly revised and updated to reflect the current state of the green building industry." Once the new accompanying checklist is available, staff will forward it to the Committee members. A minimum threshold of 50 points total will still be required in order for a project to be GreenPoint Rated.

According to the current checklist, in order for a multi-family project to be GreenPoint Rated, it must:

- earn a total of at least 50 points on the checklist;
- earn a minimum total of points for each category as noted: Community (6 of possible), Energy (30 of possible 60), Indoor Air Quality/Health (5 of possible 24), Resources (6 of 64), and Water (3 of 38);
- meet four pre-requisites: incorporate 50% construction waste diversion, exceed Title 24 energy standards by 15%, have a 3-year subcontractor guarantee and 20-year manufacturer warranty for shingle roofing, and incorporate Green Points checklist in blueprints;
- have an independent third party certified rater verify that identified measures have been incorporated into the project.

The attached checklist shows how each checklist item, sorted by project component, applies to five categories. A proponent, once meeting the three pre-requisites, may choose from a variety of checklist items, provided the minimum total of points for five categories as noted in the second bullet above, is achieved. The last page of Exhibit C is a summary of costs of green building, indicating that initial costs will likely be higher when compared to traditional building costs, but the long-term costs will be less due to energy efficiency and higher quality construction. The new guidelines also indicate the most cost effective green building measures to implement.

Existing Homes Construction (Exhibit D: FAQs, checklist and information)

Build It Green has indicated it will begin its GreenPoint Rating system for Existing Homes in July. Two rating levels will be part of the system:

1. an *Elements* Label for homes that meet basic requirements in four categories and are on track to make additional improvements over time (25 minimum points total required, with minimum thresholds for Energy Efficiency (8 points), Indoor Air Quality (2 points), Resource Conservation (2 points), and Water Conservation (4 points)), and
2. a *Whole House* label is awarded to homes and have made comprehensive green improvements (50 minimum points total required, with minimum thresholds for Energy Efficiency (20 points), Indoor Air Quality (5 points), Resource Conservation (6 points), and Water Conservation (8 points)).

Attached as Exhibit D are responses to Frequently Asked Questions related to this new rating system, along with a Draft Checklist. Because remodeling projects vary so widely in scope, and because this is a new system that is just now being made available to the public, staff is recommending that remodel or addition projects only be encouraged to be GreenPoint Rated. Also, as expressed by individuals involved in the pilot program for this system at a workshop attended by some of Building Division staff during the week of June 13, concerns have been expressed about the relative costs associated with obtaining GreenPoint Rating, given the time required of raters to assess basic components of existing homes in order to meet minimum thresholds.

Staff will assess the system over the next several months and plans to provide the Committee and City Council with additional information in the future, which may lead to requiring construction on existing homes to be mandatory GreenPoint Rated. Build It Green recommends that GreenPoint Rating be voluntary only.

What is the LEED Rating System?

The LEED (Leadership in Energy & Environmental Design) Green Building Rating System™ is a voluntary, consensus-based standard to support and certify successful green building design, construction and operations. LEED is transforming the marketplace by providing a nationally recognized certification system to promote integrated, whole-building design practices in the building industry. It is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health, similar to the GreenPoint Rating system: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

To earn LEED certification, a project must satisfy all prerequisites and a minimum number of points outlined in the LEED Rating System. The application process varies for each Rating System. LEED Rating Systems are broken down into subsections which are project specific. The subsections are as follows:

1. LEED-NC – (new construction)
2. LEED-EB – (existing building)
3. LEED-CI – (commercial interior)
4. LEED-CS – (core and shell)
5. LEED Schools – Specific rating for schools

6. LEED Retail – Specific rating for retail; two systems: New Construction and Commercial Interiors – currently in pilot; date of availability unknown, though expected not sooner than late 2008
7. LEED Healthcare – Specific rating for healthcare facilities – not yet available
8. LEED Neighborhood Development – currently in pilot; expected to launch in 2009

Under each one of these systems, builders can achieve one of the following levels of LEED certification LEED Certified, LEED Silver, LEED Gold and LEED Platinum. The amount of points necessary to achieve any one level of certification differs based on the rating system under which the specified project falls. LEED checklists for New Construction and for Shell and Core Construction, the most common checklists used for non-residential construction, are attached as Exhibit E. As noted in the checklists, and similar to the GreenPoint Rating checklists, certain measures are required and there are different categories under which points may be achieved. Below is a summary of the two checklists:

	New Construction	Shell and Core
LEED Certification	26-32 points	23-37 points
LEED Silver	33-38 points	28-33 points
LEED Gold	39-51 points	34-44 points
LEED Platinum	52-69 points	45-61 points

As the checklists show, similar to the GreenPoint Rating system's checklists, certain green building measures are required (pre-requisites) and minimum points thresholds are required in various categories. In addition, a very important point is that what may constitute 1 point in one rating system may not constitute 1 point in another rating system. In other words, the points are not comparable across the rating systems. Equally important is that when comparing points in LEED to points in the GreenPoint Rated system, the amount of work required to earn the points is very different. While it may not take a tremendous amount of work to achieve a certain number of points under the GreenPoint Rated system, the level of work required to earn a point in the LEED certification process is much more intense.

The LEED Rating system is administered by the US Green Building Council (UGBC), based in Washington, D.C. USGBC is a non-profit organization committed to expanding sustainable building practices. USGBC is composed of more than 15,000 organizations from across the building industry that are working to advance structures that are environmentally responsible, profitable, and healthy places to live and work. Members includes building owners and end-users, real estate developers, facility managers, architects, designers, engineers, general contractors, subcontractors, product and building system manufacturers, government agencies, and nonprofits.

Three areas should be considered when accounting for costs associated with LEED certification: registration and certification fees, consultant fees, and green building material fees. Registration is mandatory and the fee for a USGBC member is $450, while the non-member fee is $600. Certification fees are based upon the size of the project and can vary widely, but for both design and construction review, are typically $1,750 to $22,750. Although consultant fees will vary according to project size, as well as other factors, a rough estimate of these fees ranges from $30,000-$50,000.

Given the significant potential costs for LEED certification, staff is recommending that non-residential private developments submit the appropriate LEED checklist and obtain a minimum points score of 20, to be verified by City staff through the plan check review and inspection processes, similar to the City of Livermore's practice, which has had mandatory green building standards for new construction since January of this year. Having staff serve as the "certification" body will eliminate the potential unnecessary delays of having an outside entity serve that role, though the costs for such service will need to be addressed. Staff recommends that fees be developed that would cover the costs of such review and implementation.

Involving Development Community

On Friday, April 18th, a meeting was held to inform builders and developers in the Hayward Community of the proposed Green Building Ordinance. There were three major concerns voiced by the participants: voluntary versus mandatory compliance, process and time added for plan review, and costs of compliance to developers, Hayward homeowners, and to the small builders.

As an outcome of that first April meeting, a group comprised of volunteer members of the development community, called the Green Building Review Committee, met on May 27. During that meeting, the Committee encouraged using Build It Green's GreenPoint Rating system if the City was inclined to use a green building system, opinioned that standards not be mandatory, and encouraged using consistent standards in jurisdictions throughout the region. Members also expressed an opinion that density bonus and parking exceptions may not be sufficient incentive to encourage green building, and that other forms of market incentives should be investigated and researched, and that whatever ordinance the City determined to be appropriate should be well thought out and consistent with the ordinances of other jurisdictions.

A second meeting was held on June 24 with the Committee, who provided feedback on the draft green building ordinances, most of which has been incorporated into the attached draft ordinances. Members again encouraged voluntary compliance, rather than mandatory compliance, and supported staff's recommendation to not require compliance until July 1 of next calendar year. Some attendees did not want the City to rely on the most current GreenPoint Rating checklists, but the current ones, due to concerns of requiring increased standards for building.

DISCUSSION

In response to previous comments from the Sustainability, staff is recommending requiring mandatory green building standards for both public and private projects. However, as discussed later, staff is also recommending that the provisions of the ordinances not become effective until July 1, 2009, to allow City staff and the development community a transition period to become familiar with the requirements and processes, and to allow sufficient time to process a request through the State to exceed State Building Code and Energy Efficiency standards.

Private Green Building Ordinance (Exhibit F)

As summarized in the attached matrix, staff is recommending using the GreenPoint Rating system for all residential projects that exceed 500 square feet in size, and utilizing the City of Hayward Checklist and verification system for all non-residential projects that exceed 1,000 square feet in

area. Such thresholds are recommended to eliminate the burden on contractors and homeowners for minor projects.

The GreenPoint Rating System, which is an established system for residential green building that involves confirmation by an independent third party certified rater, is supported by the Homebuilders Association of Northern California. It is an established system that is commonly used in the region. However, the system for Existing Homes (remodels and additions) is slated to be launched in July. Such system will be subject to feedback from the development community, as were the New Construction and Multi-Family checklists and guidelines.

The real challenge to cities in developing green building measures in California relate to non-residential construction. Although LEED provides such a system, unlike the GreenPoint rating system, LEED certification is not designed to be accessible to most builders, and is quite costly.

In terms of what other cities are requiring, none of the South Alameda County jurisdictions, including Alameda County, have residential or non-residential mandatory green building standards for private development. However, some agencies are considering adopting such standards. Staff has reviewed the ordinances of other jurisdictions and Livermore, Santa Rosa, nor Pasadena, have mandatory LEED compliance provisions. They have varying forms of less-than-complete LEED compliance, and utilize an internal certification system. Although projects use LEED checklists, they are not required to go to USGBC and pay for their services. This approach results in the desired outcomes derived from the LEED point system, but does not require certification. Staff is recommending this approach for non-residential developments.

Projects for which a building permit application is submitted after July 1, 2009, would be required to comply with the ordinance. As noted later in this staff report, staff is recommending that project proponents voluntarily comply with the ordinance until that date. Certain exemptions are provided, such as for historical buildings, for typical maintenance and repair (e.g., reroofs, termite repair, etc.), for projects under $25,000 whose proponents can demonstrate to the satisfaction of the Building Official a hardship (green building measures exceed 1.0% of construction costs), etc.

Impacts to City staff would be greatest associated with using the LEED Checklist approach for non-residential development, since City staff would be the entity that ensures through plan checking and inspections that green building measures are incorporated. Staff is continuing to collect information to ascertain what the added costs and times would be for such internal certification. Allowing for a trial period until ordinance provisions would become mandatory would help with this effort. Such responsibilities under the GreenPoint Rating system would fall to the project proponent and a certified GreenPoint Rater that would be hired by the project proponent.

Municipal Green Building Ordinance (Exhibit G)

As noted in the attached matrix and draft ordinance, staff is recommending that covered projects be required to be LEED Silver certified. Not only would the LEED Silver standards be required to be incorporated into a project, but that such projects obtain LEED Silver certification. Covered projects would entail those that are equal to or exceed $5 million in construction costs (adjusted each year with an index factor) or 20,000 square feet, and which are owned or occupied by the City or Redevelopment Agency, or funded by the Redevelopment Agency, or built under a Disposition

and Development Agreement with the Redevelopment Agency, and financially assisted by the Agency in a total amount of $2,500,000 or greater in cash, land subsidies or improvements value.

Other similar projects that do not meet the size and construction cost thresholds would be required to comply with the LEED checklist 20 points minimum threshold and City of Hayward staff verification. The definition of projects covered by this ordinance is extensive, and includes more than just typical municipal projects, as is encouraged by StopWaste.org. Staff recommends that the City be the lead in incorporating green building measures into projects, and feels the recommendation supports such goal.

Voluntary Time Period for Compliance

Staff anticipates that the new green building ordinances would not be adopted until late September or October. Although staff is currently requesting that checklists be submitted for applicable projects, by adopting the ordinances as recommended to allow voluntary compliance until July 1, 2009, and delaying the time for mandatory compliance, both developers and staff will have more time to familiarize themselves with green building requirements and processes. During this period, workshops will be held with builders, developers, and property owners to review green building requirements and evaluate effectiveness of the recommended ordinances. Also, the development community will be allowed time to learn ways to incorporate green building measures into projects, and to become familiar with certified green builders and raters, who would ultimately be part of a design team. City staff can also provide adequate notice to developers for projects now in the early stages of development so they will be able to submit projects that are in compliance with the ordinances once the stage of mandatory compliance is reached. During this period, staff will also develop internal procedures for reviewing plans and inspecting projects for compliance, which will be required for non-residential private projects and minor municipal projects.

The goal is to have a clear process, good information, a trained staff, and workshops for the development community, plus a financial mechanism to support this effort. Should obvious shortfalls in the recommended provisions arise, staff would bring back recommended revisions to the ordinances to address such problems.

Requirements for Mandating Green Building Measures that Exceed State Standards

Current State law indicates that in order to mandate green building measures that exceed State Title 24 Energy Efficiency Standards, approval from the California Energy Commission is required. Such process entails filing findings with the Commission that justify such higher standards, which is a process that typically takes 6 to 9 months. If mandated, the GreenPoint Rated and LEED Rating systems would require such filings and determinations. This would require hiring a consultant to do a study to demonstrate the efficacy of such measures. The release of new 2008 Title 24 Energy Standards by the Energy Commission is anticipated to be released in early summer of 2009.

Also, to mandate standards that exceed State Building Code standards, Hayward would be required to submit findings to the State Building Standards Commission, demonstrating the amendments to the Code are necessary due to local geographical, climatic or topographical conditions. The Buildings Standards Commission does not act on such findings. Obviously, such process is much less arduous than that involving the Energy Commission.

Assembly Bill 2939 (Hancock) was introduced recently, and is supported by StopWaste.org. If adopted, it would eliminate the need for municipalities that mandate exceeding State standards to file findings with the California Energy Commission and Building Standards Commission. AB 2939 was passed by the Assembly on May 29 and forwarded to the State Senate for consideration. It is currently scheduled to be heard on June 23 by the Senate Committee on Environmental Quality.

By delaying the effective date whereby standards outlined in the ordinances would be mandatory, the City will have time to file findings and receive a decision from the California Energy Commission, or allow time for AB 2939 to be passed into law.

FISCAL IMPACT

The fiscal impacts to the City and to builders associated with this action have not yet been fully measured, which is one of the major reasons for recommending that there be a voluntary time period before the green building ordinances provisions are mandatory. Additional staff time that will be required for plan review and inspections associated with non-residential private developments have not been completely identified. City staff is currently studying its fees and will recommend updating fees to reflect the costs of providing service.

In terms of costs to the development community, rough costs associated with complying with the GreenPoint Rating and LEED Rating systems were identified earlier in this staff report under the Background section. However, determining what additional costs would be borne associated with buying green building materials is more difficult to do. For larger projects, the added cost of providing green materials is relatively small.

To assist with roughly showing what such costs may be, staff has included as Exhibit H the assumed added costs for a recently completed affordable housing project in Hayward: Sara Conner Court by Eden Housing. The attachment shows a comparison of costs associated with traditional and green building materials. In general, the green building costs are higher, and for small remodel or addition projects, could comprise a significant portion of total construction costs. Those familiar with green building measures have indicated to staff that the costs for such materials are becoming less expensive, and that resulting maintenance costs, due to higher quality construction and materials, are less when compared with traditional building costs.

NEXT STEPS

Staff will incorporate any revisions from the Sustainability Committee and bring the Municipal Green Building Ordinance to City Council in July and the Private Green Building Ordinance to City Council at a work session in September.

Prepared by:

Susan J. Daluddung, Ph.D.
Director of Community and Economic Development

Approved by:

Gregory T. Jones
City Manager

Attachments:

Exhibit A:	Matrix Summarizing Staff Recommendations
Exhibit B:	Single-Family GreenPoint Checklist and Information from Build It Green
Exhibit C:	Multi-Family GreenPoint Checklist and Information from Build It Green
Exhibit D:	Existing Homes GreenPoint Checklist and Information from Build It Green
Exhibit E:	LEED – NC (New Construction) Checklist and Information from US Green Building Council
Exhibit F:	Private Green Building Ordinance (Draft)
Exhibit G:	Municipal Green Building Ordinance (Draft)
Exhibit H:	Comparison of Traditional and Green Building Costs for Selected Construction Components for Sara Conner Court (Eden Housing) in Hayward

Exhibit A

SUMMARY OF REQUIREMENTS OF RECOMMENDED MUNICIPAL AND PRIVATE DEVLEOPMENT GREEN BUILDING ORDINANCES

Project Type	Staff's Recommendation for Green Building Standards	Anticipated City Council Meeting Dates	Anticipated Dates Provisions Would be Mandatory
Municipal Projects - Major (all new building or renovation projects that exceed $5 million in construction costs or 20,000 square feet in area and are either owned or occupied by the City or Redevelopment Agency, or developed as a Public/Private Partnership[1])	**LEED Silver Certification Required** (entails a third party rating/certification system utilizing LEED checklists)	7/29/08 – Introduce Ordinance 9/16/08 – Adopt Ordinance	10/16/08
Municipal Projects - Minor (all other new building or renovation municipal projects that are less than or equal to $5 million and 20,000 square feet)	**Non-residential components:** **Minimum score of 20 Points on LEED Checklists Required** (entails use of LEED checklists and in-house verification by City of Hayward staff) **Residential components:** **GreenPoint Rated Required** (entails a third party rating/certification system that utilizes *Build It Green's* Rating Systems)	7/29/08 – Introduce Ordinance 9/16/08 – Adopt Ordinance	10/16/08
New Single-Family Residential (detached and duplex units)	**GreenPoint Rated Required** (entails a third party rating/certification system that utilizes *Build It Green's* New Construction GreenPoint Checklist (currently 50 points minimum) for Single-Family Development)	9/16/08 – Work Session 10/13/08 – Introduce Ordinance 10/20/08 – Adopt Ordinance	7/1/2009
New Multi-Family Residential (more than two units per structure)	**GreenPoint Rated Required** (entails a third party rating/certification system that utilizes *Build It Green's* Multi-Family GreenPoint Checklist (currently 50 points minimum) for Multi-Family Development)	9/16/08 – Work Session 10/13/08 – Introduce Ordinance 10/20/08 – Adopt Ordinance	7/1/2009
Residential Remodels and Additions (applicable to projects entailing more than 500 square feet)	**GreenPoint Rated Encouraged** (entails a third party rating/certification system that utilizes *Build It Green's* Existing Homes GreenPoint Checklist) *Note: This new rating system is proposed to be started in July of 2008.*	9/16/08 – Work Session 10/13/08 – Introduce Ordinance 10/20/08 – Adopt Ordinance	-------
Non-Residential (applicable to new building construction, and tenant improvements and additions entailing more than 1,000 square feet)	**Minimum score of 20 Points on LEED Checklists Required** (entails use of LEED checklists and in-house verification by City of Hayward staff) (*similar to Livermore's current system for new non-residential development*))	9/16/08 – Work Session 10/13/08 – Introduce Ordinance 10/20/08 – Adopt Ordinance	7/1/2009

[1] "Public-Private Partnership" means any project built on City-owned or Redevelopment Agency-owned land, primarily funded by the City or Redevelopment Agency of Hayward, or built under a Disposition and Development Agreement with the Redevelopment Agency, and financially assisted by the Agency in a total amount of $2,500,000 or greater in cash, land subsidies or improvements value.

Exhibit B

Chapter Three:
Single-Family GreenPoint Checklist

The GreenPoint Checklist offers builders, homeowners, and municipalities a tool to assess how environmentally friendly or "green" a home is. This checklist is also the basis for Build It Green's third-party verification program, GreenPoint Rated. GreenPoint Rated was developed with the cooperation of local builders, city planners, and building officials. Each green measure has been assigned a point value based on its benefits to the homeowners and the environment, as well as its ease of implementation.

A home can be considered green if it fulfills the prerequisites, earns at least 150 points, and meets the minimum points per category: Energy (30), Indoor Air Quality/Health (5), Resources (16), and Water (9). Please contact Build It Green for a list of certified GreenPoint Raters if you are interested in obtaining a green home rating.

"Carmen Homes continues to pursue sustainable building methods and practices that will win Northern California neighborhoods. The GreenPoint Checklist provides a mechanism that allows us to quantify our progress."

Jeff Jacobs, Carmen Homes

POINTS PER CATEGORY	Community	Energy	IAQ/Health	Resources	Water
A. SITE					
1. Protect Topsoil and Minimize Disruption of Existing Plants & Trees					
a. Protect Topsoil from Erosion and Reuse after Construction	1				1
b. Limit and Delineate Construction Footprint for Maximum Protection					1
2. Deconstruct Instead of Demolishing Existing Buildings On Site				3	
3. Recycle Construction Waste (Including Green Waste)					
a. *Minimum 50% Waste Diversion by Weight (Recycling or Reuse) - Required*				P	
b. Minimum 65% Diversion by Weight (Recycling or Reuse)				2	
c. Minimum 80% Diversion by Weight (Recycling or Reuse)				2	
4. Use Recycled-Content Aggregate (Minimum 25%)					
a. Walkway and Driveway				1	
b. Roadway Base				1	
Site = Total 12					
B. FOUNDATION					
1. Replace Portland Cement in Concrete with Recycled Flyash or Slag					
a. Minimum 20% Flyash or Slag				1	
b. Minimum 25% Flyash or Slag				1	
2. Use Frost-Protected Shallow Foundation in Cold Areas (C.E.C. Climate Zone 16)				3	
3. Use Radon Resistant Construction (In At-Risk Locations Only)			1		
4. Design and Build Structural Pest Controls					
a. Install Termite Shields & Separate All Exterior Wood-to-Concrete Connections by Metal or Plastic Fasteners/Dividers				1	
b. All New Plants Have Trunk, Base, or Stem Located At Least 36 Inches from Foundation				1	
Foundation = Total 8					
C. LANDSCAPING					
1. Construct Resource-Efficient Landscapes					
a. No Invasive Species Listed by Cal-IPC Are Planted					1
b. No Species Will Require Shearing				1	
c. 75% of Plants Are Drought-tolerant California Natives, Mediterranean, or Other Appropriate Species					3
2. Use Fire-Safe Landscaping Techniques	1				
3. Minimize Turf Areas in Landscape Installed by Builder					
a. All Turf Will Have a Water Requirement Less than or Equal to Tall Fescue (0.8 plant factor)					2
b. Turf Shall Not Be Installed on Slopes Exceeding 10% or in Areas Less than 8 Feet Wide					2
c. Turf is <=33% of Landscaped Area (total 2 points)					2
d. Turf is <=10% of Landscaped Area (total 4 points)					2
4. Plant Shade Trees					3
5. Group Plants by Water Needs (Hydrozoning)					2
6. Install High-Efficiency Irrigation Systems					
a. System Uses Only Drip, Bubblers, or Low-flow Sprinklers					2
b. System Has Smart Controllers					3
7. Incorporate Two Inches of Compost into the Top 6 to 12 Inches of Soil					3
8. Mulch All Planting Beds to the Greater of 2 Inches or Local Water Ordinance Requirement					2
9. Use 50% Salvaged or Recycled-Content Materials for 50% of Non-Plant Landscape Elements				1	
10. Reduce Light Pollution from Site Lighting by Shielding Fixtures and/or Directing Light Downward	1				
Landscape = Total 31					

POINTS PER CATEGORY	Community	Energy	IAQ/Health	Resources	Water
D. STRUCTURAL FRAME & BUILDING ENVELOPE					
1. Apply Optimal Value Engineering					
a. Place Rafters & Studs at 24-Inch On Center Framing				1	
b. Size Door and Window Headers for Load				1	
c. Use Only Jack and Cripple Studs Required for Load				1	
2. Use Engineered Lumber					
a. Beams and Headers				1	
b. Insulated Engineered Headers	1				
c. Wood I-Joists or Web Trusses for Floors				1	
d. Wood I-Joists for Roof Rafters				1	
e. Engineered or Finger-Jointed Studs for Vertical Applications				1	
f. Oriented Strand Board for Subfloor				1	
g. Oriented Strand Board for Wall and Roof Sheathing				1	
3. Use FSC-Certified Wood					
a. Dimensional Lumber, Studs and Timber: Minimum 40% (total 2 points)				2	
b. Dimensional Lumber, Studs, and Timber: Minimum 70% (total 4 points)				2	
c. Panel Products: Minimum 40% (total 1 point)				1	
d. Panel Products: Minimum 70% (total 2 points)				1	
4. Use Solid Wall Systems (Includes SIPs, ICFs, & Any Non-Stick Frame Assembly)					
a. Floors		2		2	
b. Walls		2		2	
c. Roofs		2		2	
5. Reduce Pollution Entering the Home from the Garage					
a. Tightly Seal the Air Barrier between Garage and Living Area			1		
b. Install Garage Exhaust Fan OR Build a Detached Garage			1		
6. Design Energy Heels on Roof Trusses (75% of Attic Insulation Height at Outside Edge of Exterior Wall)		1			
7. Design Roof Trusses to Accommodate Ductwork		1			
8. Use Recycled-Content Steel Studs for 90% of Interior Wall Framing				1	
9. Thermal Mass Walls: 5/8-Inch Drywall on All Interior Walls or Walls Weigh more than 40 lb/cu.ft.		1			
10. Install Overhangs and Gutters					
a. Minimum 16-Inch Overhangs and Gutters				1	
b. Minimum 24-Inch Overhangs and Gutters		1			
Structural Frame and Building Envelope = Total 36					
E. EXTERIOR FINISH					
1. Use Recycled-Content (No Virgin Plastic) or FSC-Certified Decking				2	
2. Install a Rain Screen Wall System				2	
3. Use Durable and Noncombustible Siding Materials				1	
4. Use Durable and Noncombustible Roofing Materials				2	
Exterior Finish = Total 7					
F. INSULATION					
1. Install Insulation with 75% Recycled Content					
a. Walls and/or Floors				1	
b. Ceilings				1	
2. Install Insulation That Is Low-Emitting (Certified CA Section 01350)					
a. Walls and/or Floors			1		
b. Ceilings			1		
3. Inspect Quality of Insulation Installation before Applying Drywall		1			
Insulation = Total 5					
G. PLUMBING					
1. Distribute Domestic Hot Water Efficiently					
a. Insulate Hot Water Pipes from Water Heater to Kitchen		1			1
b. Insulate All Hot Water Pipes		1			1
c. Use Engineered Parallel Piping					1

POINTS PER CATEGORY	Community	Energy	IAQ/Health	Resources	Water
d. Use Engineered Parallel Piping with Demand Controlled Circulation Loop					1
e. Use Structured Plumbing with Demand Controlled Circulation Loop		1			2
f. Use Central Core Plumbing		1		1	2
2. Install Only High Efficiency Toilets (Dual-Flush or 1.3 gpf)					4
Plumbing = Total 17					
H. HEATING, VENTILATION & AIR CONDITIONING					
1. Design and Install HVAC System to ACCA Manual J, D, and S Recommendations		4			
2. Install Sealed Combustion Units					
a. Furnaces			2		
b. Water Heaters			2		
3. Install Zoned, Hydronic Radiant Heating with Slab Insulation		1	1		
4. Install High Efficiency Air Conditioning with Environmentally Responsible Refrigerants	1				
5. Design and Install Effective Ductwork					
a. Install HVAC Unit and Ductwork within Conditioned Space		3			
b. Use Duct Mastic on All Duct Joints and Seams		1			
c. Install Ductwork under Attic Insulation (Buried Ducts)		1			
d. Pressure Balance the Ductwork System		1			
e. Protect Ducts during Construction and Clean All Ducts before Occupancy		1			
6. Install High Efficiency HVAC Filter (MERV 6+)			1		
7. Don't Install Fireplaces or Install Sealed Gas Fireplace with Efficiency Rating Not Less Than 60% using CSA Standards			1		
8. Install Effective Exhaust Systems in Bathrooms and Kitchens					
a. Install ENERGY STAR Bathroom Fans Vented to the Outside			1		
b. All Bathroom Fans Are on Timer or Humidistat			1		
c. Install Kitchen Range Hood Vented to the Outside			1		
9. Install Mechanical Ventilation System for Cooling					
a. Install ENERGY STAR Ceiling Fans & Light Kits in Living Areas & Bedrooms		1			
b. Install Whole House Fan with Variable Speeds		1			
c. Automatically Controlled Integrated System		2			
d. Automatically Controlled Integrated System with Variable Speed Control		3			
10. Install Mechanical Fresh Air Ventilation System					
a. Any Whole House Ventilation System That Meets ASHRAE 62.2		1	2		
b. Install Air-to-Air Heat Exchanger		1	2		
11. Install Carbon Monoxide Alarms			1		
Heating, Ventilation and Air Conditioning = Total 37					
I. RENEWABLE ENERGY					
1. Pre-Plumb for Solar Water Heating		4			
2. Install Solar Water Heating System		10			
3. Install Wiring Conduit for Future Photovoltaic Installation & Provide 200 ft² of South-Facing Roof		2			
4. Install Photovoltaic (PV) Panels					
a. 30% of electric needs OR 1.2 kw (total 6 points)		6			
b. 60% of electric needs OR 2.4kw (total 12 points)		6			
c. 90% of electric need OR 3.6 kw (total 18 points)		6			
Renewable Energy = Total 34					
J. BUILDING PERFORMANCE					
1. Diagnostic Evaluations					
a. House Passes Blower Door Test		1			
b. House Passes Combustion Safety Backdraft Test			1		
2. *Design and Build High Performance Homes - 15% above Title 24 - Required*		30			
3. House Obtains ENERGY STAR® with Indoor Air Package Certification			5	2	
Building Performance = Total 39					
K. FINISHES					
1. Design Entryways to Reduce Tracked-In Contaminants			1		
2. Use Low-VOC or Zero-VOC Paint					
a. Low-VOC Interior Wall/Ceiling Paints (<50 gpl VOCs (Flat) and <150 gpl VOCs (Non-Flat))			1		
b. Zero-VOC: Interior Wall/Ceiling Paints (<5 gpl VOCs (Flat))			3		

POINTS PER CATEGORY	Community	Energy	IAQ/Health	Resources	Water
3. Use Low-VOC, Water-Based Wood Finishes (<250 gpl VOCs)			2		
4. Use Low-VOC Caulk and Construction Adhesives (<70 gpl VOCs) for All Adhesives			2		
5. Use Recycled-Content Paint				1	
6. Use Environmentally Preferable Materials for Interior Finish: A) FSC-Certified Wood B) Reclaimed, C) Rapidly Renewable D) Recycled-Content or E) Finger-Jointed					
a. Cabinets (50% Minimum)				1	
b. Interior Trim (50% Minimum)				1	
c. Shelving (50% Minimum)				1	
d. Doors (50% Minimum)				1	
e. Countertops (50% Minimum)				1	
7. Reduce Formaldehyde in Interior Finishes (CA Section 01350)					
a. Subfloor & Stair Treads (50% Minimum)			1		
b. Cabinets & Countertops (50% Minimum)			1		
c. Interior Trim (50% Minimum)			1		
d. Shelving (50% Minimum)			1		
8. After Installation of Finishes, Test of Indoor Air Shows Formaldehyde Level <27ppb			3		
Finishes = Total 22					
L. FLOORING					
1. Use Environmentally Preferable Flooring: A) FSC-Certified Wood B) Reclaimed C) Rapidly Renewable D) Recycled-Content E) Exposed Concrete. *Flooring Adhesives Must Have <50 gpl VOCs.*					
a. Minimum 15% of Floor Area				1	
b. Minimum 30% of Floor Area				1	
c. Minimum 50% of Floor Area				1	
d. Minimum 75% of Floor Area				1	
2. Thermal Mass Floors: Floor Covering Other than Carpet on 50% or More of Concrete Floors		1			
3. Flooring Meets Section 01350 or CRI Green Label Plus Requirements (50% Minimum)			2		
Flooring = Total 7					
M. APPLIANCES					
1. Install Water- and Energy-Efficient Dishwasher					
a. ENERGY STAR		1			
b. Dishwasher Uses No More than 6.5 Gallons/Cycle (total 2 points)					1
2. Install Water- and Energy-Efficient Clothes Washing Machine					
a. Meets CEE Tier 2 requirements (modified energy factor 2.0, Water Factor 6.0) (total 3 points)		1			2
b. Meets CEE Tier 3 requirements 2 (modified energy factor 2.2, Water Factor 4.5 or less) (total 5 points)					
3. Install ENERGY STAR Refrigerator					
a. ENERGY STAR Qualified & < 25 Cubic Feet Capacity		1			
b. ENERGY STAR Qualified & < 20 Cubic Feet Capacity		1			
4. Install Built-In Recycling & Composting Center					
a. Built-In Recycling Center				2	
b. Built-In Composting Center				1	
Appliances and Lighting = Total 12					
N. OTHER					
1. *Incorporate GreenPoint Rated Checklist in Blueprints - Required*				P	
2. Develop Homeowner Manual of Green Features/Benefits		1	1		1
3. Innovative Measures That Meet the Green Building Objectives of the Guidelines. Maximum of 20 points.					
4. Community Design Measures and Local Priorities: Maximum of 20 points.	20				
Other = Total 43					

	Community	Energy	IAQ/Health	Resources	Water	Total
Total Available Points in Specific Categories	24	108	46	66	47	290
Innovation Points Available in Any Category						20
OVERALL TOTAL (Note: Some points are not applicable to every project type.)						310
MINIMUM POINTS REQUIRED IN SPECIFIC CATEGORIES		**30**	**5**	**6**	**9**	**50**

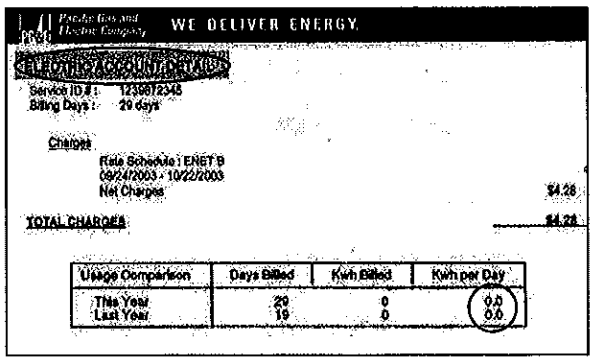
Cost Considerations

There are many reasons to build green. These include concern for the environment, desire for higher quality buildings, health considerations and interest in creating an environmentally friendly image for your business. Although some individual green building strategies may cost more, the benefits of adopting a green approach to homebuilding are remarkable.

Balancing costs and benefits

These Guidelines recommend methods and materials that range in cost—some of them cost no more or even less than conventional options. In fact, when a home is designed from the outset to be green, it need not cost more than a conventionally built home. While not all measures recommended in these Guidelines will be applicable to your project, the measures included are relevant and reasonable for residential developments built today.

Some of the recommended measures do cost more initially, but this additional cost needs to be evaluated in the context of the longer-term benefits provided: utility cost savings, better indoor air quality for residents, healthier jobsites for workers, and longer building life. When considering green building measures, it is very important to balance upfront design, product and construction costs with these other significant benefits.



Sample utility bill for a zero net energy home.

How green building can reduce costs

While the health and environmental benefits of green building are well established, many people still assume that green building costs more. But taking a whole-house systems approach to green building, as described on the previous page, can actually reduce construction and operating costs compared to standard practice. This integrated approach to green building can help steer the design away from expensive solutions and toward cost-effective ones.

During schematic design, for example, the team might consider strategies such as simplifying a building's wall structure by changing the wall articulation to a flat wall with bolted-on overhangs and thick trim. Such a change can often save money and materials, but would be costly to do once construction documents were underway.

To give another example, a design team that takes a whole-house systems approach might recommend increasing the exterior wall thickness to accommodate more insulation, which could result in reducing the size and cost of the heating system.

The key to reducing costs is to evaluate opportunities as early as possible in the design process because the range of cost-effective solutions narrows as the design progresses. Consider framing techniques. During schematic design, the design team might decide to incorporate advanced framing techniques. These techniques, as described in the Guidelines, reduce wood and construction costs while maintaining structural integrity and meeting building code. But if framing changes aren't considered until much later in the design or construction process, significant cost and resource-saving opportunities may be missed.

Green building is pushing the design and construction industry to do things that may be new, such as taking a whole-house systems approach to design and construction. Learning new practices sometimes involves an initial outlay of time and money. But green buildings are more than just buildings. They are the end result of a collaboration between people on all levels of design and construction who are committed to improving on past practices and improving homes for today and the future.

WHAT'S NEW

The 2008 edition of the *Multifamily Green Building Guidelines* consist of 66 recommended measures grouped into six sections: Planning & Design, Site, Structure, Systems, Finishes & Furnishings and Operations & Maintenance.

Although the section categories are the same as in the 2004 edition of the Guidelines, the measures have been thoroughly revised and updated to reflect the current state of the green building industry. Some original measures have been consolidated; for example, the measures encompassing passive solar heating, thermal mass flooring, daylighting, and building placement and orientation have been combined into one new measure *(Planning & Design: AA7–Passive Solar Design, Daylighting and Natural Ventilation).*

Also, a number of new measures have been added to each section:

» **Planning & Design:** AA3–Alternative Transportation, AA9–Affordability
» **Site:** A1–Protection of Soil, Water and Vegetation during Construction, B2–Source Water Efficiency
» **Structure:** C1–Acoustics, C2–Mixed-Use Design Strategies, C3–Commissioning, D2–Structural Pest and Rot Controls, E3–Vegetated Roofs, F2–Quality Installation of Insulation
» **Systems:** G2–Efficient Domestic Hot Water Distribution, G3–Water Submetering, J1–Building Performance Exceeds Title 24
» **Finishes & Furnishings:** K2–Recycled Paint, K6–Reduced Formaldehyde in Interior Finishes, L2–Low-Emitting Flooring
» **Operations & Maintenance:** N2–Transit Options, N4–Energy Monitors

Each section also now includes a brief case study that relates to the section's content. In addition, the Case Studies section at the back of the Guidelines includes new and updated in-depth project profiles.

What is green building?

Green building is a whole-systems approach to the design, construction and operation of buildings—from the early stages of development to the final finishes to the day-to-day operations and maintenance of the building. To move forward with greening your retrofit or new construction project, it is helpful to understand these five principles of green building:

1. Plan for livable communities
2. Use energy wisely
3. Improve indoor environmental quality and health
4. Conserve natural resources
5. Conserve water

PLAN FOR LIVABLE COMMUNITIES

For much of the twentieth century and continuing even today, zoning codes and conventional development practices encouraged the construction of homes ever further from city and town centers. With residential zoning segregated from commercial uses, people living in far-flung suburbs became completely dependent on automobiles to get from place to place.

Over the past few decades, the negative effects of sprawl have become increasingly apparent. Farmland and fertile soil are being paved over at an alarming rate. Plant and animal species are going extinct as buildings take the place of natural habitats. Carbon dioxide is accumulating in the atmosphere as vehicle miles traveled steadily increase. Time once available for family, community and personal activities shrinks as people spend more hours in their cars. Some experts even attribute the growing obesity epidemic to sprawl, as people drive more and walk less.

Multifamily GreenPoint Checklist

Build It Green
Smart Solutions From The Ground Up

Current Point Total	0

The GreenPoint Rated checklist tracks green features incorporated into the home. The recommended minimum requirements for a green home are: Earn a total of 50 points or more; obtain the following minimum points per category: Community (6), Energy (30), Indoor Air Quality/Health (5), Resources (6), and Water (3); and meet the prerequisites B.1.a (50% construction waste diversion), A.8 (exceed Title 24 requirements by 15%), C.10.a (3-year subcontractor guarantee and 20-year manufacturer warranty for shingle roofing), and F.1 (incorporate Green Points checklist in blueprints).

Build It Green is a non-profit organization providing the GreenPoint Rated program as a public service. Build It Green encourages local governments to leverage program resources to support voluntary, market-based programs and strategies.

The green building practices listed below are described in greater detail in the Multifamily Green Building Guidelines, available at www.builditgreen.org/greenpoint-rated/guidelines

Enter Total Conditioned Floor Area of the Project:	10,000
Enter Total Non-Residential Floor Area of Project:	
Percent of Project Dedicated to Residential Use	100%

ENTER PROJECT NAME

		Community	Energy	IAQ/Health	Resources	Water
	A. PLANNING & DESIGN	Possible Points				
	1. Infill Sites					
☐	a. Project is Located Within an Urban Growth Boundary & Avoids Environmentally Sensitive Sites	1				
☐	b. Project Includes the Redevelopment of At Least One Existing Building				1	
0	c. Housing Density of 15 Units Per Acre or More (1 pt for every 5 u/a) *Enter Project Density Number (In Units Per Acre)*	10				
☐	d. Locate Within Existing Community that has Sewer Line & Utilities in Place	1				
☐	e. Project Redevelops a Brownfield Site or is Designated a Redevelopment Area by a City	1				
	f. Site has Pedestrian Access Within ½ Mile to Neighborhood Services (1 Pt for 5 Or More, 2 Pts for 10 Or More):					
	☐ 1) Bank ☑ 2) Place of Worship ☐ 3) Full Scale Grocery/Supermarket					
	☐ 4) Day Care ☑ 5) Cleaners ☐ 6) Fire Station					
	☐ 7) Hair Care ☑ 8) Hardware ☐ 9) Laundry					
	☐ 10) Library ☐ 11) Medical/Dental ☐ 12) Senior Care Facility	2				
	☐ 13) Public Park ☐ 14) Pharmacy ☐ 15) Post Office					
	☐ 16) Restaurant ☐ 17) School ☐ 18) After School Programs					
	☐ 19) Commercial Office ☐ 20) Community Center ☐ 21) Theater/Entertainment					
	☐ 22) Convenience Store Where Meat & Produce are Sold.					
	g. Proximity to Public Transit					
	Development is Located Within:					
☐	1/4 Mile of One Planned or Current Bus Line Stop	1				
☐	1/4 Mile of Two or More Planned or Current Bus Line Stops	1				
☐	1/2 Mile of a Commuter Train/Light Rail Transit System	1				
	h. Reduced Parking Capacity:					
☐	Less than 1.5 Parking Spaces Per Unit	1				
☐	Less than 1.0 Parking Spaces Per Unit	1				
	2. Mixed-Use Developments					
☐	a. At least 2% of Development Floorspace Supports Mixed Use (Non-Residential Tenants)	1				
☐	b. Half of Above Non-Residential Floorspace is Dedicated to Neighborhood Services	1				
	3. Building Placement & Orientation					
☐	a. Protect Soil & Existing Plants & Trees	1				
	4. Design for Walking & Bicycling					
☐	a. Sidewalks Are Physically Separated from Roadways & Are 5 Feet Wide	1				
☐	b. Traffic Calming Strategies Are Installed by the Developer	1				
☐	c. Provide Dedicated, Covered & Secure Bicycle Storage for 15% of Residents	1				
☐	d. Provide Secure Bicycle Storage for 5% of Non-Residential Tenant Employees & Visitors	1				
	5. Social Gathering Places					
☐	a. Outdoor Gathering Places for Residents (Average of 50 sf Per Unit Or More)	1				
☐	b. Outdoor Gathering Places Provide Natural Elements *(For compact sites only)*	1				
	6. Design for Safety and Natural Surveillance					
☐						

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
☐ a. All Main Entrances to the Building and Site are Prominent and Visible from the Street	1				
☐ b. Residence Entries Have Views to Callers (Windows or Double Peep Holes) & Can Be Seen By Neighbors	1				

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
7. Landscaping					
☐ *Check here if the landscape area is <10% of the total site area. Projects with <10% landscape area can only check up to 3 boxes in this section.*					
☐ a. No Plant Species will Require Shearing				1	
☐ b. No plantings are Listed on the Invasive Plant Inventory by the California Invasive Plant Council				1	
☐ c. Specify Drought-tolerant California Natives, Mediterranean or Other Appropriate Species					1
d. Create Drought Resistant Soils:					
☐ i. Mulch All Planting Beds to a Depth of 2 Inches or Greater as Per Local Ordinance					1
☐ ii. Amend with 1 Inch of Compost or as per Soil Analysis to Reach 3.5% Soil Organic Matter					1
e. Design & Install High-Efficiency Irrigation System					
☐ i. Specify Smart (Weather-Based) Irrigation Controllers					1
☐ ii. Specify Drip, Bubblers or Low-Flow Sprinklers for All Non Turf Landscape Areas					1
☐ f. Group Plants by Water Needs (Hydrozones) in Planting Plans & Identify Hydrozones on Irrigation Plans					1
g. Minimize Turf in Landscape Installed by Builder					
☐ i. Do Not Specify Turf on Slopes Exceeding 10% or in Areas Less Than 8 Feet Wide					1
☐ ii. Less Than 33% of All Landscaped Area is Specified as Turf AND All Turf has Water Requirement <= To Tall Fescue					1
8. Building Performance Exceeds Title 24 by at least 15%-*Required*					
Enter the Percent Above the 2005 Version of Title 24 for Residential and Non-Residential Portions of the Project.					
0% a. Residences: 2 Points for Every 1% Above 2005 T24		0			
0% b. Non-Residential Spaces: 2 Points for Every 1% Above 2005 T24					
9. Cool Site					
☐ a. At least 30% of the Site Includes Cool Site Techniques	1				
10. Adaptable Buildings					
a. Include Universal Design Principles in Units					
☐ 50% of Units	1				
☐ 80% of Units	1				
☐ b. Live/Work Units Include A Dedicated Commercial Entrance	1				
11. Affordability					
a. A Percentage of Units are Dedicated to Households Making 80% or Less of AMI					
☐ 10% of All Units	1				
☐ 20%	1				
☐ 30%	1				
☐ 50% or More	1				
☐ b. Development Includes Multiple Bedroom Units (At least 1 Unit with 3BR or More at or Less Than 80% AMI)	2				

B. SITEWORK	Possible Points				
1. Construction & Demolition Waste Management					
Divert a Portion of all Construction & Demolition Waste:					
☐ a. *Required*: Divert 50%				R	
☐ b. Divert 65%				2	
☐ c. Divert 80% or more				2	
2. Construction Material Efficiencies					
☐ a. Lumber is Delivered Pre-Cut from Supplier (80% or More of Total Board Feet)				1	
b. Components of the Project Are Pre-Assembled Off-Site & Delivered to the Project					
☐ 25% of Total Square Footage				2	
☐ 50% of Total Square Footage				2	
☐ 75% of Total Square Footage or More				2	
3. Construction Indoor Air Quality (IAQ) Management Plan					
☐ a. An IAQ Management Plan is Written & Followed for the Project			2		

C. STRUCTURE	Possible Points				
1. Recycled Aggregate					
☐ a. Minimum 25% Recycled Aggregate (Crushed Concrete) for Fill, Backfill & Other Uses				1	
2. Recycled Flyash in Concrete					
a. Flyash or Slag is Used to Displace a Portion of Portland Cement in Concrete					
☐ 20%				1	
☐ 30% or More				1	

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
3. FSC-Certified Wood for Framing Lumber					
a. FSC-Certified Wood for a Percentage of All Dimensional Studs:					
☐ 40%				2	
☐ 70%				2	
b. FSC-Certified Panel Products for a Percentage of All Sheathing (OSB & Plywood):					
☐ 40%				1	
☐ 70%				1	
4. Engineered Lumber or Steel Studs, Joists, Headers & Beams					
☐ a. 90% or More of All Floor & Ceiling Joists				1	
☐ b. 90% or More of All Studs				2	
☐ c. 90% or More of All Headers & Beams				2	
5. Optimal Value Engineering Framing					
☐ a. Studs at 24" Centers on Top Floor Exterior Walls &/or All Interior Walls				1	
☐ b. Door & Window Headers Sized for Load				1	
☐ c. Use Only Jack & Cripple Studs Required for Load				1	
6. Steel Framing					
☐ a. Mitigate Thermal Bridging by Installing Exterior Insulation (At Least 1-Inch of Rigid Foam)		2			
7. Structural Insulated Panels (SIPs) Or Other Solid Wall Systems					
a. SIPs Or Other Solid Wall Systems are Used for 80% of All:					
☐ Floors		2		2	
☐ Walls		2		2	
☐ Roofs		2		2	
8. Raised Heel Roof Trusses					
☐ a. 75% of All Roof Trusses Have Raised Heels		1			
9. Insulation					
☐ a. All Ceiling, Wall & Floor Insulation is 01350 Certified OR Contains No Added Formaldehyde			1		
☐ b. All Ceiling, Wall & Floor Insulation Has a Recycled Content of 50% or More				1	
10. Durable Roofing Options					
☐ a. *Required:* No Shingle Roofing OR All Shingle Roofing Has 3-Yr Subcontractor Guarantee & 20-Yr Manufacturer Warranty				R	
☐ b. All Sloped Roofing Materials Carry a 40-Year Manufacturer Warranty				1	
11. Moisture Shedding & Mold Avoidance					
☐ a. Building(s) Include a Definitive Drainage Plane Under Siding				4	
☐ b. ENERGY STAR Bathroom Fans are Supplied in All Bathrooms, Are Exhausted to the Outdoors & Are Equipped with Control				1	
☐ c. A Minimum of 80% of Kitchen Range Hoods Are Vented to the Exterior			1		
12. Green Roofs					
a. A Portion of the Low-Slope Roof Area is Covered By A Vegetated or "Green" Roof					
☐ 25%	2				2
☐ 50% or More	2				2

D. SYSTEMS	Possible Points				
1. Passive Solar Heating					
☐ a. Orientation: At Least 40% of the Units Face Directly South		2			
☐ b. Shading On All South-Facing Windows Allow Sunlight to Penetrate in Winter, Not in Summer		1			
☐ c. Thermal Mass: At Least 50% of the Floor Area Directly Behind South-Facing Windows is Massive		2			
2. Radiant Hydronic Space Heating					
☐ a. Install Radiant Hydronic Space Heating for IAQ purposes (No Forced Air) in All Residences			2		
3. Solar Water Heating					
☐ a. Pre-Plumb for Solar Hot Water		1			
☐ b. Install Solar Hot Water System for Preheating DHW		4			
4. Air Conditioning with Advanced Refrigerants					
☐ a. Install Air Conditioning with Non-HCFC Refrigerants	1				
5. Advanced Ventilation Practices					
Perform the Following Practices in Residences:					
☐ a. Infiltration Testing by a C-HERS Rater for Envelope Sealing & Reduced Infiltration		2			
☐ b. Operable Windows or Skylights Are Placed To Induce Cross Ventilation (At Least One Room In 80% of Units)		1	1		
☐ c. Ceiling Fans in Every Bedroom & Living Room OR Whole House Fan is Used		1			
6. Garage Ventilation					
☐ a. Garage Ventilation Fans Are Controlled by Carbon Monoxide Sensors (Passive Ventilation Does Not Count)			1		

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
7. Low-Mercury Lamps					
a. Low-Mercury Products Are Installed Wherever Linear Fluorescent Lamps Are Used				1	
b. Low-Mercury Products Are Installed Wherever Compact Fluorescent Lamps Are Used				2	
8. Light Pollution Reduction					
a. Exterior Luminaires Emit No Light Above Horizontal OR Are Dark Sky Certified	1				
b. Control light Trespass Onto Neighboring Areas Through Appropriate Fixture Selection & Placement	1				
9. Onsite Electricity Generation					
a. Pre-Wire for Photovoltaics & Plan for Space (Clear Areas on Roof & in Mechanical Room)				1	
b. Install Photovoltaics to Offset a Percent of the Project's Total Estimated Electricity Demand					
10%	2	2			
20%	2	2			
30% or more	2	2			
c. Educational Display is Provided in a Viewable Public Area	1				
10. Elevators					
a. Gearless Elevators Are Installed		1			
11. ENERGY STAR® Appliances					
a. Install ENERGY STAR Refrigerators in All Locations					
ENERGY STAR-Qualified		1			
ACEEE-Listed Refrigerators		1			
b. Install ENERGY STAR Dishwashers in All Locations					
All Dishwashers Are ENERGY STAR-qualified		1			
Residential-grade Dishwashers Use No More than 6.5 Gallons Per Cycle		1			1
c. Install ENERGY STAR Clothes Washers in All Locations		1			2
d. Install Ventless Natural Gas Clothes Dryers in Residences			1		
12. Central Laundry					
a. Central Laundry Facilities Are Provided for All Occupants				1	
13. Water-Efficient Fixtures					
a. All Showerheads Use 2.0 Gallons Per Minute (gpm) or Less		1			1
b. High-Efficiency Toilets Use 1.28 gpf or Less or Are Dual Flush					
In All Residences					3
In All Non-Residential Areas					3
c. Install High Efficiency Urinals (0.5 gpf or less) or No-Water Urinals Wherever Urinals Are Specified:					
Average flush rate is 0.5 gallons per flush or less					1
Average flush rate is 0.1 gallons per flush or less					1
d. Flow Limiters Or Flow Control Valves Are Installed on All Faucets					
Residences: Kitchen - 2.0 gpm or less		1			1
Non-Residential Areas: Kitchen - 2.0 gpm or less		0			0
Residences: Bathroom Faucets- 1.5 gpm or less		1			1
Non-Residential Areas: Bathroom Faucets - 1.5 gpm or less		0			0
e. Non-Residential Areas: Install Pre-Rinse Spray Valves in Commercial Kitchens - 1.6 gpm or less					1
14. Source Water Efficiency					
a. Use Recycled Water for Landscape Irrigation or to Flush Toilets/Urinals					2
b. Use Captured Rainwater for Landscape Irrigation or to Flush 5% of Toilets &/or Urinals					4
c. Water Is Submetered for Each Residential Unit & Non-Residential Tenant					4

E. FINISHES AND FURNISHINGS	Possible Points				
1. Construction Indoor Air Quality Management					
a. Perform a 2-Week Whole Building Flush-Out Prior to Occupancy			1		
2. Entryways					
a. Provide Permanent Walk-Off Mats and Shoe Storage at All Home Entrances			1		
b. Permanent Walk-Off Systems Are Provided at All Main Building Entrances & In Common Areas			1		
3. Recycling & Waste Collection					
a. Residences: Provide Built-In Recycling Center In Each Unit				2	

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
4. Use Low/No-VOC Paints & Coatings					
a. Low-VOC Interior Paints (<50 gpl VOCs (Flat) and <150 gpl VOCs (Non-Flat))					
In All Residences			1		
In All Non-Residential Areas:			0		
b. Zero-VOC: InteriorPaints (<5 gpl VOCs (Flat))					
In All Residences			1		
In All Non-Residential Areas:			0		
c. Wood Coatings Meet the Green Seal Standards for Low-VOCs					
In All Residences			2		
In All Non-Residential Areas:			0		
d. Wood Stains Meet the Green Seal Standards for Low-VOCs					
In All Residences			2		
In All Non-Residential Areas:			0		
5. Use Recycled Content Exterior Paint					
a. Use Recycled Content Paint on 50% of All Exteriors				1	
6. Low-VOC Construction Adhesives					
a. Use Low-VOC Construction Adhesives (<70 gpl VOCs) for All Adhesives			1		
7. Environmentally Preferable Materials for Interior Finish					
Use Environmentally Preferable Materials for Interior Finish: A) FSC-Certified Wood, B) Reclaimed Lumber, C) Rapidly Renewable D) Recycled-Content or E) Finger-Jointed					
a. Residences: At Least 50% of Each Material:					
i. Cabinets				1	
ii. Interior Trim				1	
iii. Shelving				1	
iv. Doors				1	
v. Countertops				1	
b. Non-Residential Areas: At Least 50% of Each Material:					
i. Cabinets				0	
ii. Interior Trim				0	
iii. Shelving				0	
iv. Doors				0	
v. Countertops				0	
8. Reduce Formaldehyde in Interior Finish Materials					
Reduce Formaldehyde in Interior Finish Materials (Section 01350) for At Least 50% of Each Material Below:					
a. Residences:					
i. Cabinets			1		
ii. Interior Trim			1		
iii. Shelving			1		
iv. Subfloor			1		
b. Non-Residential Areas:					
i. Cabinets			0		
ii. Interior Trim			0		
iii. Shelving			0		
iv. Subfloor			0		
9. Environmentally Preferable Flooring					
Use Environmentally Preferable Flooring: A) FSC-Certified or Reclaimed Wood, B) Rapidly Renewable Flooring Materials, C) Recycled-Content Ceramic Tiles, D) Exposed Concrete as Finished Floor or E) Recycled-Content Carpet. Note: Flooring Adhesives Must Have <50 gpl VOCs.					
a. Residences:					
i. Minimum 15% of Floor Area				1	
ii. Minimum 30% of Floor Area				1	
iii. Minimum 50% of Floor Area				1	
iv. Minimum 75% of Floor Area				1	
b. Non-Residential Areas:					
i. Minimum 15% of Floor Area				0	
ii. Minimum 30% of Floor Area				0	
iii. Minimum 50% of Floor Area				0	
iv. Minimum 75% of Floor Area				0	
10. Low-Emitting Flooring					
a. Residences: Flooring Meets Section 01350 or CRI Green Label Plus Requirements (50% Minimum)			1		

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
☐					
☐ b. Non-Residential Areas: Flooring Meets Section 01350 or CRI Green Label Plus Requirements (50% Minimum)			0		

ENTER PROJECT NAME	Community	Energy	IAQ/Health	Resources	Water
11. Durable Cabinets					
Install Durable Cabinets in All:					
☐ a. Residences				1	
☐ b. Non-Residential Areas				0	
12. Furniture & Outdoor Play Structures					
☐ a. Play Structures & Surfaces Have an Overall Average Recycled Content Greater Than 20%				1	
☐ b. Environmentally Preferable Exterior Site Furnishings				1	
☐ c. At Least 25% of All newly Supplied Interior Furniture has Environmentally Preferable Attributes			1		
13. Vandalism Deterrence					
☐ a. Project Includes Vandalism Resistant Finishes and Strategies	1				

F. OTHER	Possible Points				
1. Incorporate GreenPoint Checklist in Blueprints					
☑ a. *Required:* Incorporate GreenPoint Checklist in Blueprints	Y				
2. Operations & Maintenance Manuals					
☐ a. Provide O&M Manual to Building Maintenance Staff		1			
☐ b. Provide O&M Manual to Occupants		1			1
3. Transit Options					
☐ a. Residents Are Offered Free or Discounted Transit Passes	2				
4. Educational Signage					
☐ a. Educational Signage Highlighting & Explaining the Project's Green Features is Included	1				
5. Vandalism Management Plan					
☐ a. Project Includes a Vandalism Management Plan for Dealing with Disturbances Post-Occupancy	1				

6. Innovation: List innovative measures that meet the green building objectives of the Multifamily Guidelines. Enter up to a 4 Points in each category. Points will be evaluated by local jurisdiction or GreenPoint rater.

0	Innovation in **Community**: Enter up to 4 Points at left. Enter description here
0	Innovation in **Energy**: Enter up to 4 Points at left. Enter description here
0	Innovation in **IAQ/Health**: Enter up to 4 Points at left. Enter description here
0	Innovation in **Resources**: Enter up to 4 Points at left. Enter description here
0	Innovation in **Water**: Enter up to 4 Points at left. Enter description here

Summary

Points Achieved from Specific Categories	0	0	0	0	0
Current Point Total	0				

Project has not yet met the recommended minimum requirements

- *Total Project Score of At Least 50 Points*
- *Minimum points in specific categories: Community (6), Energy (30), IAQ/Health (5), Resources (6), Water (3)*
- *Required measures B.1a, C.10a, and/or F.1a*

Integrating the design process allows for creative solutions to complex problems. Questions can be raised and answered openly through a charrette or team meeting. New technologies or practices are explored as a group, allowing enthusiasm, skepticism and solutions to surface at the same time. Misconceptions can be cleared up, and changes to standard practice can be highlighted.

How green building can reduce costs

While the health and environmental benefits of green building are well established, many people still assume that green building costs more. But taking an integrated approach to design, as described above, can actually reduce construction and operating costs. The key to saving money is to evaluate opportunities as early as possible in the design process because the range of cost-effective solutions narrows as the design progresses.

A contractor, for example, can be engaged early in design to help steer the design away from expensive solutions and toward cost-effective ones. The options available during schematic design can include strategies such as using structural insulated panels (SIPs) instead of conventional wood framing. Such a change can often save money, energy and labor, but would be costly to do once construction documents were underway.

Just as the contractor can help the design team find cost-effective green solutions, so can the other team members. The mechanical engineer may be able to recommend increasing the exterior wall thickness to accommodate more insulation, which could result in reducing the size and cost of the heating system. If the developer is concerned with achieving HUD noise ratings and is part of this conversation, she may ask the engineer whether using special sound-rated windows will also help reduce cooling needs.

For every recommendation in these Guidelines, we have carefully weighed the measure's cost against its benefits to justify its inclusion. While not all measures will be applicable to your project, the measures included are relevant and reasonable for multifamily developments built and renovated today.

Some of the recommended measures do cost more initially, but this additional cost needs to be evaluated in the context of longer-term benefits provided, such as utility cost savings, better indoor air quality and longer building life. When considering green building measures, it is very important to balance upfront design, product and construction costs with these other significant benefits (this process of evaluating the long-term costs of design decisions is often referred to as "lifecycle cost analysis").

Funding affordable housing involves unique challenges and opportunities, particularly if the design includes green building measures that may cost more upfront but provide long-term benefits. For good information about funding affordable, green multifamily buildings, visit the Green Affordable Housing Coalition's website at www.greenaffordablehousing.org.

Green building can be seen as pushing the design and construction industry to do things that may be new, such as integrating the design process. Learning new practices sometimes costs money. But green buildings are more than just buildings. They are the end result of collaboration between people on all levels of design and construction who are committed to improving homes for today and the future.

Exhibit D

GreenPoint Rated Existing Home Backgrounder

GreenPointRATED
A PROGRAM OF BUILD IT GREEN

Q: What is GreenPoint Rated?

A: GreenPoint Rated is a credible third party rating system administered by Build It Green, a non-profit organization whose mission is to promote healthy and efficient homes in California. GreenPoint Rated provides an independent assessment of a home across five categories: Community Design, Energy Efficiency, Indoor Air Quality/ Health, Resource Conservation, and Water Conservation. It offers a trustworthy consumer label that verifies the green features in a home.

Q: What are the Benefits of having a home GreenPoint Rated?

A: The GreenPoint Rated Existing Home system takes the guesswork out of understanding how to improve your home. A GreenPoint Rated home will be warmer in the winter and cooler in the summer because of its efficient energy systems and quality construction. The third party evaluation can increase the resale value of a home by providing proof that it home was built to last, with green materials and practices helping to lower utility bills and provide a healthier environment for you and your family.

Q: What type of improvements should I make?

A: Build It Green has developed the Home Remodeling Green Building Guidelines as a set of best practices for homeowners wishing to pursue an environmentally sound remodel. The GreenPoint Rated Existing Home checklist builds on these guidelines by setting specific thresholds to encourage improvements that make your home more environmentally friendly, such as installing efficient appliances, lighting, and plumbing fixtures, improving indoor air quality, and encouraging the use of durable, high-quality materials that increase your home's value and reduce its impact on the environment.

Q: Can I qualify for GreenPoint Rated if I am doing a small remodel such as a kitchen?

A: GreenPoint Rated Existing Home offers a pathway for green home improvement. Most home remodels involve sections of the home, not addressing the entire home at one time. A major objective of the Existing Home rating system is to educate homeowners about the benefits of green remodeling and to provide recommendations on making improvements.

Depending on a home's current energy performance and the extent of green home improvements, it will receive either an Elements or Whole House consumer label.

An Elements label is provided to homes that meet basic requirements in four environmental categories and are on track to make additional improvements over time. A Whole House label is awarded to homes that meet more extensive requirements and have made comprehensive green improvements.

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Q: How do I decide if my project should use the Whole House rating or the Element System?

A: Typically, the Elements label is available to homes in the following situation:

- A portion of the home is undergoing a remodeled or addition (ie a kitchen remodel or master bedroom addition). The entire home will not be evaluated for green building practices.
- The homeowner anticipates qualifying for GreenPoint Rated Whole House over time and wants to verify sections under current remodeling.
- The home is undergoing some energy upgrades that do not encompass the requirements to meet GreenPoint Rated Whole House

Whole House rating should be used in the following situations:

- The homeowner has completed updates over time.
- The homeowner is in the process of completing a significant remodel

Q: What are the requirements for qualification?

A: GreenPoint Rated Existing Home is designed to provide an accessible entry point, and also to reward comprehensive improvements.

The requirements to qualify for the Elements label include:

- An energy survey to determine possible cost effective energy upgrades
- Visual evaluation of the HVAC system
- Pass an inspection for plumbing leaks
- Pass a back-draft safety test
- Recycling during any remodeling project
- Obtains 25 minimum points and point thresholds for energy efficiency (8 pts), indoor air quality (2 pts), resource conservation (2 pts) and water conservation (4 pts)

The requirements for the Whole House label include:

- An energy evaluation, including home performance testing
- Eleven basic health and safety and systems integrity requirements
- Recycling during any remodeling project
- Obtains 50 minimum points and point thresholds for energy efficiency (20 pts), indoor air quality (5 pts), resource conservation (6 pts) and water conservation (8 pts)

Q: How is the home evaluated?

A: Build It Green trains and certifies independent GreenPoint Raters who are prepared to support you as you make green home improvements. The Rater then conducts the verification and compiles supporting documentation for the rating process. Points are given for green improvements in the five environmental categories. The greener the home, the more points the home will earn.

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Q: What do I receive after completing the GreenPoint rating?

A: Homes qualifying for an Elements label will receive:

- An Elements Certificate of Evaluation with a total point score (capped at 49 points) and performance in the environmental categories
- Information indicating additional requirements and points needed to qualify for a Whole House rating

Homes qualifying for the Whole House label will receive:

- A Certificate of Evaluation with a total point score and performance in the environmental categories
- An evaluation of the homes energy performance

Q: How do I get started?

A: Contact Build It Green at greenpointrated@builditgreen.org to assist you in finding a GreenPoint Rater.

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DRAFT GreenPoint Rated Existing Home Checklist

Build It Green
Smart Solutions From The Ground Up

The GreenPoint Rated checklist tracks green features incorporated into the home. The minimum requirements for a green home seeking the Whole House Rating are listed in the project summary at the end of this checklist. This checklist is used to track projects seeking a Whole House or Elements Rating using the GreenPoint Rated Existing Home Rating System.

The green building practices listed below are described in the GreenPoint Rated Existing Home Rating Manual and the Home Remodeling Guidelines available at www.builditgreen.org. Build It Green is a non-profit organization providing the GreenPoint Rated program as a public service. Build It Green encourages local governments to leverage program resources to support voluntary, market-based programs and strategies.

Project Type: **Whole House**

Elements

Points Achieved:

Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water
		0	30	5	6	9
AA. COMMUNITY		**Possible Points**				
1. Infill Site						
☐ a. Home is Located in a Built Urban Setting with Utilities in Place for Fifteen Years		1			1	
☐ b. Home is Located within 1/2 Mile of a Major Transit Stop		2				
2. Compact Development & House Size						
☐ b. Density of 10 Units per Acre or Greater		2			2	
☐ c. Home Size Efficiency					9	
3. Pedestrian and Bicycle Access/ Alternative Transportation						
a. Site has Pedestrian Access Within ½ Mile of community services:						
TIER 1: 1) Day Care 2) Community Center 3) Public Park						
4) Drug Store 5) Restaurant 6) School						
7) Library 8) Farmer's Market 9) After School Programs						
10) Convenience Store Where Meat & Produce are Sold						
TIER 2: 1) Bank 2) Place of Worship 3) Laundry/Cleaners						
4) Hardware 5) Theater/Entertainment 6) Fitness/Gym						
7) Post Office 8) Senior Care Facility 9) Medical/Dental						
10) Hair Care 11) Commercial Office of Major Employer 12) Full Scale Supermarket						
☐ 5 Services Listed Above (Tier 2 Services count as 1/2 Service Value)		1				
☐ 10 Services Listed Above (Tier 2 Services count as 1/2 Service Value)		1				
☐ b. Access to A Dedicated Pedestrian Pathway to Places of Recreational Interest within 1/2 Mile		1				
☐ c. At Least Two of the Following Traffic-Calming Strategies Installed within 1/4 mile:		1				
Designated Bicycle Lanes are Present on Roadways;						
Ten-Foot Vehicle Travel Lanes;						
Street Crossings Closest to Site are Located Less Than 300 Feet Apart;						
Streets Have Rumble Strips, Bulbouts, Raised Crosswalks or Refuge Islands						
4. Safety & Social Gathering						
☐ a. Front Entrance Has Views from the Inside to Outside Callers		1				
☐ b. Front Entrance Can be Seen from the Street and/or from Other Front Doors		1				
☐ c. Porch (min. 100sf) Oriented to Streets and Public Spaces		1				
5. Diverse Households						
☐ a. Home Has at Least One Zero-Step Entrance		1				
☐ b. All Main Floor Interior Doors & Passageways Have a Minimum 32-Inch Clear Passage Space		1				
☐ c. Home includes at Least a Half-Bath on the Ground Floor with Blocking in Walls for Grab Bars		1				
☐ d. Lot Includes Full-Function Independent Rental Unit		1				
Total Points Available in Community = 28						

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Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water
A. SITE						
1. Protect Existing Soil and Minimize Disruption of Existing Plants & Trees						
☐ a. Protect Existing Topsoil from Erosion and Reuse after Construction		1				1
2. Recycle Construction and Demolition Waste						
☐ a. Recycle All Cardboard, Concrete, and Metals (Required for Whole House and Elements projects undergoing work)					R	
b. Deconstruct for Reuse the Following Items: 1) Appliances, 2) Brick, tile, masonry, 3) Cabinetry, 4) Countertops, 5) Doors, 6) Fixtures (plumbing, lighting, etc), 7) Sinks/Tubs, 8) Toilets (1.6 only), 9) Windows, 10) Wood - (2x4, flooring, form boards					2	
☐ c. Recycle 25% of C&D waste in addition to 100% of cardboard, concrete, and metals						
☐ **3. Construction IAQ Management Plan**				2		
Total Points Available in Site = 6						
B. FOUNDATION						
1. Replace Portland Cement in Concrete with Recycled Flyash or Slag						
☐ a. Minimum 20% Flyash and/or Slag					1	
☐ b. Minimum 30% Flyash and/or Slag					1	
☐ **2. Moisture Source Analysis and Correction** (Required for Whole House)				R		
3. Retrofit Crawl Space to Control Moisture						
☐ a. Control Ground Moisture with Vapor Barrier				2		
☐ b. Foundation Drainage System					2	
☐ **4. Pest Inspection and Correction**					1	
5. Design and Build Structural Pest Controls						
☐ a. Install Termite Shields & Separate All Exterior Wood-to-Concrete Connections by Metal or Plastic Fasteners/Dividers					1	
☐ b. All New Plants Have Trunk, Base, or Stem Located At Least 36 Inches from Foundation					1	
☐ **6. Radon Testing and Correction or Radon Resistant Construction**				1		
Total Points Available in Foundation = 10						
C. LANDSCAPE						
☐ **Check here if the landscape area is <15% of the total site area (only 3 points available in this section for projects with <15% landscape area)**						
1. Resource-Efficient Landscapes						
☐ a. No Invasive Species Listed by Cal-IPC Are Planted						1
☐ b. No Plant Species Require Shearing					1	
☐ c. 50% of Plants Are California Natives or Mediterranean Climate Species						3
☐ **2. Fire-Safe Landscaping Techniques**		1				
3. Minimal Turf Areas						
☐ a. Turf Not Installed on Slopes Exceeding 10% or in Areas Less than 8 Feet Wide						2
☐ b. Turf is minimized <33% of Landscaped Area						2
☐ c. Turf is <10% of Landscaped Area or eliminated						2
☐ **4. Shade Trees Planted**		1	1			1
☐ **5. Plants Grouped by Water Needs (Hydrozoning)**						2
6. High-Efficiency Irrigation Systems Installed						
☐ a. System Uses Only Low-Flow Drip, Bubblers, or Low-flow Sprinklers						2
☐ b. System Has Smart Controllers						3
☐ **7. Compost and Recycle Garden Trimmings on Site**						1
8. Mulch in All Planting Beds to the Greater of 2 Inches or Local Water Ordinance Requirement						2
9. Use Salvaged or Recycled-content Materials For Non-plant Landscape Elements					1	
☐ **10. Light Pollution Reduced by Shielding Fixtures and Directing Light Downward**		1				
11. Rain Water Harvesting System (1 point for <350 gallons, 2 points for > 350 gallons)						
☐ a. Less than 350 gallon capacity						1
☐ b. Greater than 350 gallon capacity						2
☐ **12. Soil is Amended with Compost**		1		1		
☐ Total Points Available in Landscape = x						

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Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water
D. STRUCTURAL FRAME & BUILDING ENVELOPE						
1. Optimal Value Engineering						
a. Place Rafters & Studs at 24-Inch On Center Framing					1	
b. Size Door & Window Headers for Load					1	
c. Use Only Jack & Cripple Studs Required for Load					1	
2. Engineered Lumber						
a. Beams & Headers					1	
b. Insulated Engineered Headers			1			
c. Wood I-Joists or Web Trusses for Floors					1	
d. Wood I-Joists for Roof Rafters					1	
e. Engineered or Finger-Jointed Studs for Vertical Applications					1	
f. Oriented Strand Board for Subfloor					1	
g. Oriented Strand Board Wall and/or Roof Sheathing					1	
3. FSC Certified Wood						
a. Dimensional Lumber, Studs, and Timber: Minimum 40%					2	
b. Dimensional Lumber, Studs, and Timber: Minimum 70%					2	
c. Panel Products: Minimum 40%					1	
d. Panel Products: Minimum 70%					1	
4. Solid Wall Systems (includes SIPs, ICFs, & Any Non-Stick Frame Assembly)						
a. Floors			2		2	
b. Walls			2		2	
c. Roofs			2		2	
5. Reduce Pollution Entering the Home from the Garage						
a Tightly Seal the Air Barrier between Garage and Living Area				1		
b. Install Garage Exhaust Fan OR Build a Detached Garage				1		
6. Energy Heels on Roof Trusses (75% of Attic Insulation Height at Outside Edge of Exterior Wall)			1			
7. Overhangs and Gutters Installed					1	
a. Minimum 16-Inch Overhangs and Gutters					1	
b. Minimum 24-Inch Overhangs and Gutters			1			
☐ **8. Retrofit/ Upgrade Structure for Lateral Load Reinforcement for Wind or Seismic**						
☐ a. Anchor Sill Plate to foundation					x	
☐ b. Partial Lateral Load Reinforcement Upgrades/ Retrofits					x	
☐ c. Lateral Load Reinforcement Upgrades/ Retrofits for Entire home					x	
10. Sound Exterior Assemblies (Required for Whole House)					R	
☐ **11. Strap Water Heater** (Required for Whole House)					R	
Total Points Available in Structural Frame & Building Envelope = 35						
E. EXTERIOR FINISH						
1. Recycled-Content (No Virgin Plastic) or FSC-Certified Wood Decking					2	
2. Rain Screen Wall System Installed					2	
3. Durable & Noncombustible Siding Materials					1	
4. Durable & Noncombustible Roofing Materials					2	
Total Points Available in Exterior Finish = 7						
F. INSULATION						
1. Insulation with 75% Recycled Content						
a. Walls and Floors					1	
☐ b. Ceilings					1	
2. Low-Emitting Insulation (Certified CA Section 01350)						
a. Walls and Floors				1		
☐ b. Ceilings				1		
3. Inspect Quality of Insulation Installation before Applying Drywall			1			
Total Points Available in Insulation = 5						

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Project Name	Points	Achieved	Community	Energy	IAQ/Health	Resources	Water
G. PLUMBING							
1. Distribute Domestic Hot Water Efficiently							
☐ a. Insulate all accessible Hot Water Pipes				1			1
☐ b. Install On-Demand Recirculation Contro Pump							
☑ **2. High-Efficiency Toilets (Dual-Flush or ≤ 1.28 gpf)**						1	2
3. Water Efficient Fixtures							
☐ a. All Fixtures Meet Federal Energy Policy Act (Toilets: 1.6 gpf, Sinks: 2.2 gpm, Showers: 2.5 gpm) (Required for Whole House)							R
b. High Efficiency Showerheads or Shower Towers Use < 2.0 gpm				1			1
c. High Efficiency Bathrooms Faucets Use <1.5 gpm				1			1
☐ **4. Plumbing System Integrity and No Plumbing Leaks** (Required for Whole House and Elements)							R
☐ **5. Water Pressure Test**							1
Total Points Available in Plumbing = 19							
H. HEATING, VENTILATION & AIR CONDITIONING							
1. General HVAC Equipment Evaluation and correction							
☐ a. HVAC Equipment Installation (Required for Whole House and Elements)				R			
☐ b. Conduct Testing to Evaluate System and Verify Proper Air Flow				1			
☐ c. Conduct flow hood test and assess supply and delivery of air				1			
☐ **2. Design and Install HVAC System to ACCA Manual J and Manual D**				4			
3. Sealed Combustion Units							
☐ a. Furnaces					2		
☐ b. Water heaters					2		
4. Zoned, Hydronic Radiant Heating				1	1		
☐ **5. High Efficiency Air Conditioning Air conditioning with Advanced Refrigerants**			1				
☐ **6. Effective Ductwork Installation**							
☐ a. New Ductwork and HVAC unit Installed Within Conditioned Space				3			
☐ b. Duct Mastic Used on All Ducts, Joints and Seams				1			
☐ c. Ductwork Installed under Attic Insulation (Buried Ducts)				1			
☐ d. Ductwork System is Pressure Balanced				1			
☐ **7. Install High Efficiency HVAC Filter (MERV 6+)**					1		
☐ **8. Fireplace and Chimney Inspection and Correction** (Required for Whole House- requirement pending)					R		
☐ **9. No Fireplace or Sealed Gas Fireplaces with Efficiency Rating NOT Less Than 60% using CSA Standards**					1		
10. Effective Exhaust Systems Installed in Bathrooms and Kitchens							
☐ a. Install ENERGY STAR Bathroom Fans Vented to the Outside					1		
☐ b. All Bathroom Fans are on Timer or Humidistat					1		
☐ c. Install Kitchen Range Hood Vented to the Outside					1		
11. Mechanical Ventilation System for Cooling Installed							
☐ a. Install ENERGY STAR Ceiling Fans & Light Kits in Living Areas & Bedrooms				1			
☐ b. Install Whole House Fan with Variable Speeds				1			

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Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water
5. Innovation: List innovative measures that meet the green building objectives of the Remodeling Guidelines.						
☐ Innovation in **Community:** Enter description here						
☐ Innovation in **Energy:** Enter description here						
☐ Innovation in **IAQ/Health:** Enter description here						
☐ Innovation in **Resources:** Enter description here						
☐ Innovation in **Water:** Enter description here						
Total Points Available in Innovation = 6+						
Summary						
Total Available Points	181	23	95+	44	77	37
Minimum Points Required	50		30	5	6	9
Total Points Achieved						

#REF!

- *Total Project Score of At Least 50 Points*

#REF!

-A2a: Recycle All Cardboard, Concrete and Metals
-B2: Moisture Source Inspection and Correction
-D9: Anchor Sill Plate to Foundation
-D10: Sound Exterior Assemblies
-G3a: All Fixtures Meet Federal Energy Policy Act
-G4: Plumbing System Integrity and No Plumbing Leaks
-G5: Water Pressure Test
-H1a: Heating and cooling equipment and installation inspection
-H1b: Verify proper air flow (static pressure; temperature rise)

#REF!

-H9: Fireplace and Chimney Inspection and Correction
-H14a: Carbon Monoxide Testing and Correction
-J4b: Blower Door Testing ACH is < 0.5 or 50% improvement
-J3a: Meet Energy Budget for Home Based on Year
-J1: Energy Survey
-M1: Combustion Safety Backdraft Test
-M7: Electrical Integrity
-N1: Incorporate GreenPoint Checklist in Blueprints and Planning

- *Minimum points in specific categories:*

-Energy (30 points)
-IAQ/Health (5 points)
-Resources (6 points)
-Water (9 points)

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The GreenPoint Rated Pathway

The GreenPoint Rated comprehensive approach to home remodeling will enhance the well-being of your family, support a healthy community, and preserve the natural environment. In practical terms, green building is a "whole systems" approach that incorporates the following five principles:

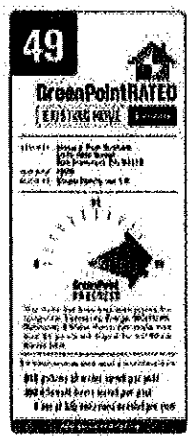
- Livable Communities
- Energy Efficiency
- Indoor Air Quality
- Resource Conservation
- Water Conservation

GreenPoint Rated Existing Home is designed to provide an accessible entry point, and also to reward comprehensive improvements. Whether you are planning a small remodel or a major renovation, GreenPoint Rated Existing Home takes the guesswork out of improving your home's energy and water efficiency, to help make your home more comfortable and healthier for you and your family.

Because GreenPoint Rated is a program of California non-profit Build It Green, you can be assured that you are getting unbiased information. And you will be assured that your home is more comfortable, its systems are more efficient, and it is crafted with care.

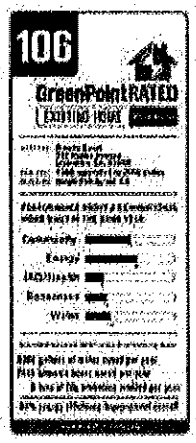
GreenPoint Rated Existing Home offers two consumer labels.

Depending on the extent of improvements you have made or are planning to make to your home, it could qualify for either the Elements label or the Whole House label.



ELEMENTS

The Elements label is for homes that meet basic requirements and are on track to make additional improvements over time. Homeowners receive recommendations identifying changes that will make their homes more comfortable, more energy efficient, and better for the environment. Of course, older homes are likely to require more changes than newer ones.



WHOLE HOUSE

A Whole House label is awarded to homes that meet more extensive requirements and have made comprehensive green improvements. A Whole House label means that the home has significantly improved its energy efficiency and environmental impact compared to homes of a similar vintage.

Exhibit E

LEED for New Construction v 2.2
Registered Project Checklist

Project Name: _____

Project Address: _____

Yes	?	No		
			Project Totals (Pre-Certification Estimates)	69 Points
			Certified: 26-32 points **Silver:** 33-38 points **Gold:** 39-51 points **Platinum:** 52-69 points	

Yes	?	No			
			Sustainable Sites		14 Points
Yes			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density & Community Connectivity**	1
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation**, Public Transportation	1
			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Low-Emitting & Fuel Efficient Vehicles	1
			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
			Credit 5.1	**Site Development**, Protect or Restore Habitat	1
			Credit 5.2	**Site Development**, Maximize Open Space	1
			Credit 6.1	**Stormwater Design**, Quantity Control	1
			Credit 6.2	**Stormwater Design**, Quality Control	1
			Credit 7.1	**Heat Island Effect**, Non-Roof	1
			Credit 7.2	**Heat Island Effect**, Roof	1
			Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
			Water Efficiency		5 Points
			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

LEED for New Construction v 2.2
Registered Project Checklist

Yes	?	No				
			Energy & Atmosphere			**17 Points**
Yes			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**		Required
Yes			Prereq 1	**Minimum Energy Performance**		Required
Yes			Prereq 1	**Fundamental Refrigerant Management**		Required

***Note for EAc1:** All LEED for New Construction projects registered after June 26, 2007 are required to achieve at least two (2) points.

			Credit 1	**Optimize Energy Performance**	1 to 10
			Credit 1.1	10.5% New Buildings / 3.5% Existing Building Renovations	1
			Credit 1.2	14% New Buildings / 7% Existing Building Renovations	2
			Credit 1.3	17.5% New Buildings / 10.5% Existing Building Renovations	3
			Credit 1.4	21% New Buildings / 14% Existing Building Renovations	4
			Credit 1.5	24.5% New Buildings / 17.5% Existing Building Renovations	5
			Credit 1.6	28% New Buildings / 21% Existing Building Renovations	6
			Credit 1.7	31.5% New Buildings / 24.5% Existing Building Renovations	7
			Credit 1.8	35% New Buildings / 28% Existing Building Renovations	8
			Credit 1.9	38.5% New Buildings / 31.5% Existing Building Renovations	9
			Credit 1.10	42% New Buildings / 35% Existing Building Renovations	10
			Credit 2	**On-Site Renewable Energy**	1 to 3
			Credit 2.1	2.5% Renewable Energy	1
			Credit 2.2	7.5% Renewable Energy	2
			Credit 2.3	12.5% Renewable Energy	3
			Credit 3	**Enhanced Commissioning**	1
			Credit 4	**Enhanced Refrigerant Management**	1
			Credit 5	**Measurement & Verification**	1
			Credit 6	**Green Power**	1

LEED for New Construction v 2.2
Registered Project Checklist

Yes	?	No			
			Materials & Resources		**13 Points**
Yes			Prereq 1	**Storage & Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse,** Maintain 75% of Existing Walls, Floors & Roof	1
			Credit 1.2	**Building Reuse,** Maintain 95% of Existing Walls, Floors & Roof	1
			Credit 1.3	**Building Reuse,** Maintain 50% of Interior Non-Structural Elements	1
			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			Credit 3.1	**Materials Reuse**, 5%	1
			Credit 3.2	**Materials Reuse**, 10%	1
			Credit 4.1	**Recycled Content**, 10% (post-consumer + 1/2 pre-consumer)	1
			Credit 4.2	**Recycled Content**, 20% (post-consumer + 1/2 pre-consumer)	1
			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured	1
			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured	1
			Credit 6	**Rapidly Renewable Materials**	1
			Credit 7	**Certified Wood**	1

Yes	?	No			
			Indoor Environmental Quality		**15 Points**
Yes			Prereq 1	**Minimum IAQ Performance**	Required
Yes			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3.1	**Construction IAQ Management Plan,** During Construction	1
			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6.1	**Controllability of Systems**, Lighting	1
			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
			Credit 7.1	**Thermal Comfort,** Design	1
			Credit 7.2	**Thermal Comfort,** Verification	1
			Credit 8.1	**Daylight & Views,** Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views,** Views for 90% of Spaces	1

LEED for New Construction v 2.2
Registered Project Checklist

Yes	?	No			
			Innovation & Design Process		**5 Points**
			Credit 1.1	**Innovation in Design:** Provide Specific Title	1
			Credit 1.2	**Innovation in Design:** Provide Specific Title	1
			Credit 1.3	**Innovation in Design:** Provide Specific Title	1
			Credit 1.4	**Innovation in Design:** Provide Specific Title	1
			Credit 2	**LEED® Accredited Professional**	1

LEED for Core and Shell v2.0
Registered Project Checklist

Project Name: _____

Project Address: _____

Yes	?	No		
0	0		Project Totals (Pre-Certification Estimates)	69 Points
			Certified: 23-27 points **Silver:** 28-33 points **Gold:** 34-44 points **Platinum:** 45-61 points	

Yes	?	No			
			Sustainable Sites		15 Points
Yes			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density & Community Connectivity**	1
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation**, Public Transportation	1
			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Low-Emitting & Fuel Efficient Vehicles	1
			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
			Credit 5.1	**Site Development**, Protect or Restore Habitat	1
			Credit 5.2	**Site Development**, Maximize Open Space	1
			Credit 6.1	**Stormwater Design**, Quantity Control	1
			Credit 6.2	**Stormwater Design**, Quality Control	1
			Credit 7.1	**Heat Island Effect**, Non-Roof	1
			Credit 7.2	**Heat Island Effect**, Roof	1
			Credit 8	**Light Pollution Reduction**	1
			Credit 9	**Tenant Design & Construction Guidelines**	1

Yes	?	No			
			Water Efficiency		5 Points
			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

LEED for Core and Shell v2.0
Registered Project Checklist

Yes	?	No			
			Energy & Atmosphere		**14 Points**
Yes			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Yes			Prereq 2	**Minimum Energy Performance**	Required
Yes			Prereq 3	**Fundamental Refrigerant Management**	Required

***Note for EAc1:** All LEED for Core and Shell projects registered after June 26, 2007 are required to achieve at least two (2) points.

		Credit 1	**Optimize Energy Performance**	1 to 8
		Credit 1.1	10.5% New Buildings / 3.5% Existing Building Renovations	1
		Credit 1.2	14% New Buildings / 7% Existing Building Renovations	2
		Credit 1.3	17.5% New Buildings / 10.5% Existing Building Renovations	3
		Credit 1.4	21% New Buildings / 14% Existing Building Renovations	4
		Credit 1.5	24.5% New Buildings / 17.5% Existing Building Renovations	5
		Credit 1.6	28% New Buildings / 21% Existing Building Renovations	6
		Credit 1.7	31.5% New Buildings / 24.5% Existing Building Renovations	7
		Credit 1.8	35% New Buildings / 28% Existing Building Renovations	8
		Credit 2	**On-Site Renewable Energy**	1
		Credit 3	**Enhanced Commissioning**	1
		Credit 4	**Enhanced Refrigerant Management**	1
		Credit 5.1	**Measurement & Verification** - Base Building	1
		Credit 5.2	**Measurement & Verification** - Tenant Sub-metering	1
		Credit 6	**Green Power**	1

LEED for Core and Shell v2.0
Registered Project Checklist

Yes	?	No	Materials & Resources	11 Points

Yes	?	No			
Yes			Prereq 1	**Storage & Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse,** Maintain 25% of Existing Walls, Floors & Roof	1
			Credit 1.2	**Building Reuse,** Maintain 50% of Existing Walls, Floors & Roof	1
			Credit 1.3	**Building Reuse,** Maintain 75% of Interior Non-Structural Elements	1
			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			Credit 3	**Materials Reuse**, 1%	1
			Credit 4.1	**Recycled Content**, 10% (post-consumer + 1/2 pre-consumer)	1
			Credit 4.2	**Recycled Content**, 20% (post-consumer + 1/2 pre-consumer)	1
			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured	1
			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured	1
			Credit 6	**Certified Wood**	1

Yes	?	No	Indoor Environmental Quality	11 Points
0	0			

Yes	?	No			
Yes			Prereq 1	**Minimum IAQ Performance**	Required
Yes			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3	**Construction IAQ Management Plan,** During Construction	1
			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6	**Controllability of Systems**, Thermal Comfort	1
			Credit 7	**Thermal Comfort,** Design	1
			Credit 8.1	**Daylight & Views,** Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views,** Views for 90% of Spaces	1

***Note for EQc4.1-4.4:** Project teams will receive 1 point for achievement of 2 credits, 2 points for achievement of 3 credits, or 3 points for achievement of 4 credits among EQc4.1, EQc4.2, EQc4.3 and EQc4.4.

LEED for Core and Shell v2.0
Registered Project Checklist

Yes	?	No			
			Innovation & Design Process		**5 Points**
			Credit 1.1	**Innovation in Design:** Provide Specific Title	1
			Credit 1.2	**Innovation in Design:** Provide Specific Title	1
			Credit 1.3	**Innovation in Design:** Provide Specific Title	1
			Credit 1.4	**Innovation in Design:** Provide Specific Title	1
			Credit 2	**LEED® Accredited Professional**	1

HAYWARD CITY COUNCIL

ORDINANCE NO. _____

AN ORDINANCE ADDING ARTICLE 22 TO CHAPTER 10 OF THE HAYWARD MUNICIPAL CODE ESTABLISHING GREEN BUILDING REQUIREMENTS FOR NEW CONSTRUCTION

SECTION 1. PURPOSE. The purpose of this Article is to promote the health, safety and welfare of Hayward residents, workers and visitors by minimizing the use and waste of energy, water and other natural resources in the construction and operation of the City's building stock and by providing a healthy indoor environment.

The green building practices required by this Article will encourage resource conservation, reduce waste generated by construction projects, increase energy efficiency and promote the health and productivity of residents, workers, and visitors of the City.

SECTION 2. FINDINGS. The City Council of the City of Hayward hereby finds that:

A. The design, construction, and maintenance of buildings and structures within the City can have a significant impact on the City's environmental sustainability, resource usage, energy efficiency, waste management, and the health and productivity of residents, workers, and visitors.

B. Green building design, construction, and operation can have a significant, positive effect on resource conservation, energy efficiency, waste and pollution generation, and the health and productivity of a building's occupants over the life of the building.

C. Green building benefits are spread throughout the systems and features of the building. Green buildings can include, among other things, the use of certified sustainable wood products; extensive use of high-recycled-content products; recycling of waste that occurs during deconstruction, demolition, and construction; orientation and design of a building to reduce the demand on the heating, ventilating, and air conditioning systems; the use of heating, ventilating, and air conditioning systems that provide energy efficiency and improved indoor air quality; enhancement of indoor air quality by selection and use of construction materials that do not emit chemicals that are toxic or irritating to building occupants; the use of water conserving methods and equipment; and installation of alternative energy methods for supplemental energy production.

D. In recent years, green building design, construction and operational techniques have become increasingly widespread. Many homeowners, businesses, and building professionals have voluntarily sought to incorporate green building techniques into their projects. A number of local and national systems have been developed to serve as guides to green building practices.

Requiring commercial and new residential projects to incorporate green building measures is appropriate to help achieve the public health and welfare benefits of green building.

SECTION 3. The City of Hayward's Municipal Code is hereby amended to add Article 22 to Chapter 10 as follows:

"GREEN BUILDING REQUIREMENTS

SECTION 10- 22.100 TITLE. This Article shall be known and may be cited as the Green Building Ordinance of the City of Hayward.

SECTION 10-22.110 DEFINITIONS. For the purposes of this Article, certain terms are defined as follows:

a. "Applicant" means any individual, firm, Limited Liability Company, association, partnership, political subdivision, government agency, industry, public or private corporation or any other entity that applies to the City of Hayward for permit(s) to construct a Project subject to the provisions of this Article.

b. "City" means the City of Hayward.

c. "Commercial" means any building or space used for retail, industrial, office or other non-residential use.

d. "Green building" means a whole systems approach to the design, construction, and operation of buildings and structures that helps mitigate the environmental, economic, and social impacts of construction, demolition and renovation. Green building practices recognize the relationship between natural and built environments and seek to minimize the use of energy, water, and other natural resources and provide a healthy, productive indoor environment.

e. "GreenPoint Rated" means the most recent editions of the residential green building rating program developed by Build It Green. City staff shall maintain the most recent version of the GreenPoint checklists and Residential Green Building Guidelines for New Home Construction, Existing Homes, Home Remodeling and Multifamily Building.

f. "Historical Building" means any structure or collection of structures deemed of importance to the history, architecture or culture of an area by an appropriate local or state governmental jurisdiction, per Section 18955 of the California Health and Safety Code and Section 8-201 of the 2007 California Historical Building Code, Title 24, Part 8.

g. "LEED TM" and "LEED TM Checklist" mean the Leadership in Energy and Environmental Design rating system, certification methodology, and checklist used

by the United States Green Building Council (USGBC). City staff shall maintain the most recent version of the LEED TM Rating system at all times.

h. "LEED Accredited Professional" means an individual who has passed the LEED TM accreditation exam administered by the US Green Building Council.

i. "Multifamily Residential Building" means a single residential building that has more than two dwelling units.

j. "Mixed-Use" means a building with residential and commercial or retail uses, or a combination of residential, commercial and retail uses.

k. "Project" means any proposed residential or commercial construction for which an application for a building permit is received on or after July 1, 2009.

l. "Special Needs" means individuals who require assistance for disabilities such as medical, mental, or psychological. .

SECTION 10- 22.120 APPLICATION AND EXEMPTIONS.

The provisions of this Article apply to private residential construction for which a building permit application is received on or after July 1, 2009, with the following exemptions:

a. Buildings that have been designated as "Historical" pursuant to the California Historical Building Code, Title 24 Part 8.

b. Permits issued only for foundation repair, re-roofing, repair of fire damage, work required by termite reports, upgrades for accessibility or special needs households, or other items of building or structural maintenance.

c. Hardship exemptions may be granted by the Building Official for projects valued at less than $50,000 where the Project Applicant can demonstrate the cost of complete compliance will exceed 1.0% of construction costs. In these cases the applicant may limit compliance to 1% of the cost of the project.

d. Exemptions or partial exemptions may be granted by the Building Official for other projects where it can be demonstrated that complete compliance is not possible due to unusual building circumstances. This exemption is for other than economic considerations.

SECTION -10-22.130 ALTERNATIVE GREEN BUILDING REQUIREMENTS.

The following green building requirements shall apply to all Projects subject to this Article. Wherever reference is made to the Hayward Green Checklist or Green Point Rated systems, a comparable equivalent rating system may be used if the Building Official finds the

proposed alternate method is satisfactory and complies with the intent of this ordinance. The applicable requirements are those in effect at the time a complete application for the Project is submitted to the Building or Planning Division.

SECTION 10 -22.140 - GREEN POINTS BASED PROJECTS

a. Multi-Family Residential Buildings

Effective July 1, 2009, Applicants for Multi-Family Residential Building Projects, prior to obtaining a Certificate of Occupancy, shall submit documentation demonstrating the building has been certified by a third-party rater as complying with the current Green Point checklist for Multi-Family Residential development and has earned a minimum of 50 points. This shall also apply to mixed-use projects including residential and commercial uses.

b. New Single Family Dwellings of Any Size (includes Detached Single Family Dwellings, Duplexes and Townhouses of two dwelling units or less per building.)

Effective July 1, 2009, Applicants for new single family dwellings projects of any size, prior to obtaining a Certificate of Occupancy, shall submit documentation demonstrating the building has been certified by a third- party rater as complying with the current GreenPoint checklist for new single family dwellings and has earned a minimum of 50 points.

c. Residential Additions/Remodels Greater Than 500 Square Feet

Effective July 1, 2009, Applicants for Projects consisting of remodels and/or additions greater than 500 square feet to existing residential single family or multi-family dwellings, shall submit, with their permit application, the GreenPoints checklist for remodeling /existing homes. The applicant shall indicate on the plans if any of the items on the checklist have been incorporated into the project. Applicants are encouraged to install items form the checklist but only completing the list and submitting it is mandatory.

d. All Commercial Projects

Effective July 1, 2009, Applicants for Projects consisting of new commercial projects or of remodels and/or additions greater than 1000 square feet to existing commercial projects, shall submit with their permit application, the LEED™ checklist appropriate to the project. The plans shall clearly show where each item has been incorporated into the project. A minimum of 20 points shall be achieved. The plan review, to be conducted by City staff, shall verify the incorporation of checklist items into the plans. The building inspection process, to be conducted by City staff, shall verify the inclusion of these items in the construction. A Certificate of Occupancy shall not be issued until the installation of the checklist items is verified by City staff. The

Certificate of Occupancy shall state that the project complies with the Green Building Ordinance.

SECTION 4. SEVERANCE. Should any part of this ordinance be declared by a final decision by a court or tribunal of competent jurisdiction to be unconstitutional, invalid, or beyond the authority of the City, such decision shall not affect the validity of the remainder of this ordinance, which shall continue in full force and effect, provided that the remainder of the ordinance, absent the unexcised portion, can be reasonably interpreted to give effect to the intentions of the City Council.

SECTION 5. In accordance with the provisions of Section 620 of the City Charter, this ordinance shall become effective thirty days after adoption.

INTRODUCED at a regular meeting of the City Council of the City of Hayward, held the

____day of _____, 2008, by Council Member_____.

ADOPTED at a regular meeting of the City Council of the City of Hayward held

the__ day of __, 2008, by the following votes of members of said City Council.

AYES: COUNCIL MEMBERS:
MAYOR:

NOES: COUNCIL MEMBERS:

ATTEST: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

APPROVED: _____
Mayor of the City of Hayward

DATE:_____

ATTEST:_____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

_____
City Attorney of the City of Hayward

HAYWARD CITY COUNCIL

ORDINANCE NO. _____

AN ORDINANCE ADDING ARTICLE 21 TO CHAPTER 10 OF THE HAYWARD MUNICIPAL CODE ESTABLISHING GREEN BUILDING REQUIREMENTS FOR NEW MUNICIPAL CONSTRUCTION

THE CITY COUNCIL OF THE CITY OF HAYWARD DOES ORDAIN AS FOLLOWS:

SECTION 1. PURPOSE. The purpose of this article is to promote the health, safety and welfare of Hayward residents, workers and visitors by minimizing the use and waste of energy, water and other natural resources in the construction and operation of the City's building stock and by providing a healthy indoor environment.

The green building practices required by this Article will encourage resource conservation, reduce waste generated by construction projects, increase energy efficiency and promote the health and productivity of residents, workers, and visitors of the City.

SECTION 2. FINDINGS. The design, construction, and maintenance of buildings and structures within the city can have a significant impact on the city's environmental sustainability, resource usage, energy efficiency, waste management, and the health and productivity of residents, workers, and visitors.

Green building design, construction, and operation can have a significant, positive effect on resource conservation, energy efficiency, waste and pollution generation, and the health and productivity of a building's occupants over the life of the building.

Green building benefits are spread throughout the systems and features of the building. Green buildings can include, among other things, the use of certified sustainable wood products; extensive use of high-recycled-content products; recycling of waste that occurs during deconstruction, demolition, and construction; orientation and design of a building to reduce the demand on the heating, ventilating, and air conditioning systems; the use of heating, ventilating, and air conditioning systems that provide energy efficiency and improved indoor air quality; enhancement of indoor air quality by selection and use of construction materials that do not emit chemicals that are toxic or irritating to building occupants; the use of water conserving methods and equipment; and installation of alternative energy methods for supplemental energy production.

In recent years, green building design, construction and operational techniques have become increasingly widespread. Many homeowners, businesses, and building professionals have voluntarily sought to incorporate green building techniques into their projects. A number of local and national systems have been developed to serve as guides to green building practices. The U.S. Green Building Council, developer of the Leadership in Energy and Environmental

Design (LEED™) Green Building Rating Systems and LEED™ Reference Guide, has become a leader in promoting and guiding green building. The New Homes Green Points Calculator and the Multifamily Green Points Project Tool approved by the Alameda County Waste Management Authority are useful documents in evaluating residential green building projects.

Requiring municipal projects to incorporate green building measures is necessary and appropriate to achieve the public health and welfare benefits of green building.

SECTION 3. The City of Hayward's Municipal Code is hereby amended to add Article 21 to Chapter 10 as follows:

"GREEN BUILDING REQUIREMENTS FOR MUNICIPAL BUILDINGS"

SECTION 10- 21.100 TITLE. This Article shall be known and may be cited as the Municipal Buildings Green Building Ordinance of the City of Hayward.

SECTION 10-21.110 DEFINITIONS. For the purposes of this Article, certain terms are defined as follows:

a. "Applicant" means any individual, firm, Limited Liability Company, association, partnership, political subdivision, government agency, industry, public or private corporation or any other entity that applies to the City of Hayward for permit(s) to construct a Project subject to the provisions of this Article.

b. "City Project" means any new construction or renovation of a building owned or occupied by the City or the Redevelopment Agency of the City.

c. "Covered Project" means all new Building or Renovation projects that equal or exceed the greater of 20,000 square feet in area or $5 million in construction costs adjusted annually to the Building Cost Index published in the Engineering News-Record Magazine, and are either owned or occupied by the City or the Redevelopment Agency of the City or developed as a Public/Private Partnership.

d. "GreenPoint Rated" means the most recent version of the residential green building rating program developed by Build It Green. City staff shall maintain the most recent version of the GreenPoint checklists and Residential Green Building Guidelines for New Home Construction, Existing Homes and Multifamily Building.

e. "LEED ™" and "LEED ™ Checklist" mean the Leadership in Energy and Environmental Design rating system, certification methodology, and checklist used by the United States Green Building Council (USGBC). City staff shall maintain the most recent version of the LEED ™ Rating system at all times.

f. "LEED Accredited Professional" means an individual who has passed the LEED ™ accreditation exam administered by the US Green Building Council.

g. "Minor City Project" shall mean all new Building or Renovation projects that are less than 20,000 square feet in area or $5 million in adjusted construction costs and are either owned or occupied by the City or the Redevelopment Agency of the City or developed as a Public/Private Partnership.

h. "Public-Private Partnership" means any project built on City-owned or Redevelopment Agency-owned land, primarily funded by the City or Redevelopment Agency, of Hayward, or built under a Disposition and Development Agreement with the Redevelopment Agency, and financially assisted by the Agency in a total amount of $2,500,000 or greater in cash, land subsidies or improvements value.

i. "Renovation" means any change, addition or modification to an existing Building or Structure including, but not limited to, tenant improvements.

j. "Structure" means that which is built or constructed, an edifice or building of any kind or any piece of work artificially built or composed of parts joined together in some definite manner and permanently attached to the ground.

SECTION 10- 21.120 APPLICATION AND EXEMPTIONS.

The provisions of this Article apply to all Covered Projects and Minor City Projects submitted for plan check review after the effective date of this Article with the following exemptions:

a. Buildings that have been designated as "Historical" pursuant to the California Historical Building Code, Title 24 Part 8, are exempt from these requirements.

b. Permits issued only for foundation repair, re-roofing, repair of fire damage, work required by termite reports, or other items of building or structural maintenance.

c. Exemptions or partial exemptions may be granted by the City Manager for other projects where it can be demonstrated that complete compliance is not possible due to unusual building circumstances

d. Exemptions or partial exemptions may be granted by the City Council/Agency Board for "Public/Private Partnerships" where it can be demonstrated that compliance with this Ordinance is not financially feasible by either the private-sector developer or the Redevelopment Agency, and that the proposed building will provide an over-riding benefit to the community.

SECTION 10-21.130 STANDARD FOR COMPLIANCE.

a. All Covered Projects shall meet either a minimum LEED ™ Silver rating and be so certified by the US Green Building Council or a minimum GreenPoint Rated score of

50 and be so verified by Build It Green. All covered projects shall also have a LEED-Accredited Professional or a Certified Green Building Professional as a principal member of the design team from the beginning of the project. The LEED™ rating option to be used shall be chosen by the LEED-Accredited professional as the one most appropriate for the project.

b. Minor City Projects are required to complete and submit the GreenPoint checklist or the LEED™ as a way of documenting the green building practices incorporated into the project. Projects using the LEED checklist shall earn a minimum of 20 points.

c. The Director of Public Works Department or his or her designee shall regularly review the project specifications used in bidding traditional Public Works Projects to include the best green building/environmental practices applicable.

SECTION 10-21.140. Unusual Circumstances.

Compliance with the provisions of this Article may be waived in unusual circumstances where the City Council has, by resolution, found and determined the public interest would not be served by complying with such provision."

SECTION 4. PROMULGATION OF IMPLEMENTING REGULATIONS. The City Manager shall, within 30 days of ordinance adoption, promulgate and rules and regulations necessary or appropriate to achieve compliance with the requirements of this Chapter. The initial rules and regulations shall be promulgated after securing and reviewing comments from affected City departments.

SECTION 5 SEVERANCE. Should any part of this ordinance be declared by a final decision by a court or tribunal of competent jurisdiction to be unconstitutional, invalid, or beyond the authority of the City, such decision shall not affect the validity of the remainder of this ordinance, which shall continue in full force and effect, provided that the remainder of the ordinance, absent the unexcised portion, can be reasonably interpreted to give effect to the intentions of the City Council.

SECTION 6. In accordance with the provisions of Section 620 of the City Charter, this ordinance shall become effective 30 days from and after the date of its adoption.

INTRODUCED at a regular meeting of the City Council of the City of Hayward, held the

____day of _____, 2008, by Council Member_____.

ADOPTED at a regular meeting of the City Council of the City of Hayward held

the__ day of __, 2008, by the following votes of members of said City Council.

AYES: COUNCIL MEMBERS:
MAYOR:

NOES: COUNCIL MEMBERS:

ATTEST: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

APPROVED: _____
Mayor of the City of Hayward

DATE: _____

ATTEST: _____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

_____
City Attorney of the City of Hayward

Cost Benefit Review

Green Building Measures Incorporated at Sara Conner Court, a 57 Unit Tax Credit Family Development in Hayward, CA			
INDOOR AIR QUALITY IMPROVEMENTS			
Green Point Measures	Green cost	Trad cost	Benefit
Use Densglass exterior gypsum sheathing			Helps provide consistent interior temperature
Exhaust fan in every bathroom is controlled by timers.	57.99	17.99	Reduces energy consumption
Entryways are carpet-free to prevent the tracking-in of contaminants and help transition between indoor and outdoor space	-		Fewer outside contaminents which are tracked in leads to improved air quality
At least 80% of hood ranges are vented to the exterior	-		Better ventilation provides better air quality
Usage of non VOC paint	$36.98 per gallon	$20.98 per gallon	Fewer fumes leads to improved air quality
Installation of Green Label carpet for flooring (Example brand name - *Puresque*™)	$24-35 per sq. yard	$15.75-39.60 per sq. yard	Provides better air quality
Installation of true linoleum for flooring vs. traditional vinyl flooring	$45 per sq. yard	$16-31 per sq. yard	Very durable and usually lasts many decades, which reduces waste associated with relatively frequent replacement of flexible vinyl flooring
Installation of wood flooring alternatives for community room (factory-applied finish and glueless floating floor) vs. true wood flooring	$30 per 20 sq. ft.	$70 per 20 sq. ft.	Very durable and usually lasts many decades
Usage of low formaldehyde content, fully sealed particle board (MDF) for cabinets, countertops, and shelving	4x8 .5 MDF $21.17	Tempered Hardboard $9.27	Less formaldehyde leads to better air quality
Apollo hydronic heating system			Reduces energy consumption
Energy Star appliances:			
Clotheswasher	$ 500.00	$ 300.00	Reduces energy consumption
Dishwasher	$ 545.00	$ 545.00	Reduces energy consumption
Compact Refrigerator w/ manual defrost	$ 195.00	$ 175.00	Reduces energy consumption

Exhibit H

Fluorescent and high-pressure sodium light fixtures for outdoor lighting	3.50	0.50	High pressure sodium and metal halide fixtures last 10 times longer than conventional bulbs
Efficient duct design, advanced duct sealing with third party verification testing by a C-HERS rater			More efficient distribution of cold and heated air into house means less energy consumption
Use of occupancy sensors to turn off lights for all bathrooms, garages and storage spaces	57.99	17.99	Lower energy needs

Cost Benefit Review

IBACOS, a research organization which writes technical reports and market delivery projects for the Department of Energy, sponsored a study in 2004 entitled, "Two Case Studies in Achieving Energy Savings between 40 and 60%." A link to the report can be found at **http://www.ibacos.com/reports.html.** The report focuses on the incorporation of energy saving products and measures into the building of a prototype home for a building company named Montgomery & Rust. The study details the process used to incorporate each measure individually, addressing the challenges or problems which were encountered with implementation. The report tracked the cost premium for implementing "greener" building techniques.

The following chart lists the measures which were incorporated and the costs associated with these activities. The "Cost to Builder" column represents the actual cost incurred for each activity. The "Market Cost" column represents the extra cost or premium which the builder incurred. The "Market Cost" represents what the builder paid for each activity over and above his traditional cost. Some of these costs have a negative value associated with them. This means that the builder realized a cost savings. For example, for "Advanced Framing Techniques" the builder realized a cost savings of $200 because these techniques generally use less material, specifically less wood is used in the process.

Improvement Activity	Cost to Builder	Market Cost
Insulating Concrete Form Foundation	$3,000	$1,500
Advanced Framing Techniques	$0	-$200
FSC Certified Framing Lumber	$150	$0
Open cell, expanding spray foam insulation	$4,300	$4,300
Optimized Space Conditioning System	-$1,300	-$1,300
ERV Ventilation System	$750	$700
Improved Air Distribution System	$0	$0
Direct vent, tankless hot water heater	$250	$250
Manifold distribution plumbing system	$100	$50
Advanced lighting design	$2,000	$1,000
Energy Star Appliances	$350	$350
Total	**$9,600**	**$6,650**

Upon their initial assessment, the builder initially projected that consumers may be willing to pay an extra $15,000 to $20,000 premium for this upgrade package. In order for the builder to make a profit on this upgrade package at this estimated price, the cost associated with the upgrade would need to be $11,500-$15,300. This cost range was therefore kept in mind throughout the design phase of the project. The total market cost for the advanced systems used in this pilot are less than the original costs deemed acceptable by the builder and developer. Based upon these costs and a thirty percent mark-up for the builder, a homeowner would pay about $9000 for this upgrade. Assuming a 7.0% interest rate, the homeowner's monthly mortgage costs would increase about $60. However the upgrade would reduce energy costs by approximately $100 per month.

The estimated energy savings for each major step of the project can be found in the chart below.

	Site Energy		Estimated Source Energy		Builder Standard Energy Cost		Builder Standard Measure Package	
Improvement Increment	KWh	therms	MBTU	Savings%	$/yr	Savings%	Value ($/yr)	Savings ($/yr)
BA Definition	14,780	2,054	369		4,349			
Builder Standard	14,225	1,657	322	13%	3,782			
(1) = Base + Insulated Concrete Form Foundation System	14,210	1,652	322	13%	3,774	0.20%	8	8
(2) = (1) + Improved Thermal Envelope & Building Air Tightness	13,820	1,367	288	22%	3,366	11%	407	415
(3) = (2) + Improved Mechanical Ventilation	14,018	1,112	265	28%	3,068	18.90%	298	713
(4) = (3) + High Performance HVAC & Air Distribution Systems	13,543	983	246	33%	2,848	24.70%	221	934
(5) = (4) + DHW Improvements	13,543	898	238	36%	2,739	27.60%	109	1,043
Final = (5) + Energy Efficient Lighting & Appliances	11812	928	222	40%	2,573	32%	166	1,209